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**Knowledge and Attitudes of Nurses in
Bahrain Regarding Pain Management in
Adult Patients with SCD**

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Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD

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Submitted in part fulfillment of the master in Science in Nursing

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Declaration

This thesis is submitted in partial fulfilment of the requirements of the MSc in Nursing in the Royal College of Surgeons in Ireland Medical University of Bahrain and has not been submitted to any other university. I confirm that this thesis is my own work. Assistance has been acknowledged. Permission is given to the Library of the Royal College of Surgeons in Ireland Medical University of Bahrain to lend or copy this thesis.

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Abstract

Background: Unmanaged pain is a widespread problem that many SCD patients face on a daily basis. SCD pain can be either acute or chronic. Unmanaged pain increased the morbidity and mortality rate in SCD patients; moreover, it has devastating effects on the quality of life.

Aim and objective: to assess the level of knowledge and attitudes of nursing staff working in sickle cell disease units in Kingdom of Bahrain regarding pain management for adult SCD patients.

Methodology/ Design: A positivist, quantitative study approach was used.

Method: The sample in this study consisted of 30 staff nurses working in adult SCD wards. Staff nurses asked to complete the demographic data section and the modified Nurses' Knowledge and Attitude Survey Regarding Pain management tool.

Results: The results of the study showed that a mean score of 15.8 ± 3 (47.8%) out of 33 was achieved by staff nurses regarding SCD pain management. The data showed that staff nurses demonstrated significant knowledge deficit and negative attitudes regarding pain management. In addition, no significant relationship was found between the demographic data (age, nationality, level of education, year of working experience, attendance of pain management course), of staff nurses and their knowledge and attitudes of SCD pain management.

Conclusion: The results were seen to be consistent with previous studies that show lack of knowledge and negative attitudes regarding assessment and management of pain.

Implications for practice: The findings of this study suggest the need for the development of specific strategies to effectively educate the staff nurses about pain assessment and management, as well as integrate pain management as a major component of the in-service programmes and undergraduate-nursing curriculum to improve patient outcomes.

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Chapter 1: Introduction and Significance of the study

1.1 Introduction

In Kingdom of Bahrain and all Middle Eastern countries, genetic blood diseases are prevalent such as sickle cell disease (SCD), glucose-6-phosphate dehydrogenase (G6PD) and thalassaemia (Al Arrayed, 2005). According to the World Health Organization's (WHO) health report (2006), nearly 5% of the world's population carries genes responsible for haemoglobinopathies and yearly about 300, 000 infants are born with major haemoglobin disorders.

SCD is a chronic genetic blood disease and a widespread autosomal recessive disorder (Dunlop and Bennett, 2006; Morton *et al.*, 2005). It is characterized by abnormal sickle-shape red blood cell (Timby and Smith, 2010). These cells are blocking the small blood vessels and interrupting the supply of oxygen to body tissues, causing inflammation, tissue damage, physical dysfunction and intense episodes of pain "crisis" that primarily characterize the disease (Edwards *et al.*, 2005; Morton *et al.*, 2005). Therefore, patient with SCD usually experiences periodic episodes of extensive sickling or crisis (Timby and Smith, 2010).

SCD is common in people from African descent; and it was spread from Africa to America, Caribbean islands, and South Europe (Dunlop and Bennett, 2006). According to WHO report, nearly 70% are born globally with haemoglobin disorders and the higher incident rate for SCD is in Africa. In Nigeria alone, annually around 150, 000 children are born with sickle cell (WHO, 2006). It is estimated that over 70,000 people have SCD in the United States and nearly 1,000 babies are born with the disease each year (Sickle Cell Disease Association of America, 2005). It also affects people in Middle East countries including the Kingdom of Bahrain, Saudi

Arabia, Yemen, Kuwait, and Lebanon as well as in Mediterranean countries (Dunlop and Bennett, 2006). Therefore, SCD is considered as an international health problem and a global challenge. SCD patients often require standard treatment and supportive care that include pain relief medication, intravenous fluid therapy and antibiotic and sometimes hospitalization. Such treatment therapies consider as economic burden on the health organization. In US, the total hospital costs for hospitalized SCD patients in 2004 were almost \$488 million (Steiner and Miller, 2006). In Kingdom of Bahrain, the cost for one-day hospitalization is 238.2 BD (Bahrain Health Statistics, 2009). Knowing the estimates cost of care per SCD patient is a direct reflection of health care utilization and it may serve several purposes such as understanding the economic burden of SCD facilitates and it may help in prioritization of research efforts (Kauf *et al.*, 2009) that lead to cost-effective high quality of care.

SCD is the most common hereditary blood disorder in Kingdom of Bahrain and other countries in the Middle East. It was found that it is the simple haplotype form of the disease with low morbidity and mortality rate comparing to African-American type (Serjeant and Serjeant, 2004; Al Arrayed and Haites, 1995). Nadkarni *et al.* (1991) conducted a hospital-based study on 56,198 neonatal and non-neonatal Bahraini patients during the period from 1982 to 1987. The researchers found that 44.35% of the neonatal were having abnormal haemoglobin, and the incidence of SCD was 2.1% and 18.10 % sickle cell trait. Later study found that there was a 60% decline in the birth prevalence rate of SCD cases as it was 0.9% (Al Arrayed, 2005) and it was due to population awareness about the hereditary diseases. In fact, currently, there is no official statistical data available about the prevalence of SCD in Kingdom of Bahrain. However, the Ministry of Health officials mentioned in national newspapers that an estimated 18,000 people have SCD in Kingdom of Bahrain

(Singh, 2010 a). Despite that in 1990, hereditary anaemia was found to be the third leading causes of attendance to Accident and Emergency (AE) of Salmaniya Medical Complex (SMC) (Al Arrayed *et al.*, 2002). Additionally, according to Medical Review Office (2010), the average number of adult patients with SCD crisis attending AE in SMC is 100/day. Moreover, the number of hospital admission due to SCD crisis is increasing gradually, as it was 3350 in 2007 and in 2010 reached to 4585. In 2007, the average length of stay (ALS) in the hospital for SCD patients was 4.8 days with a total of 18,474 days of care (DOC), which was the highest comparing to other diseases. As of 2009, the ALS and DOC have increased to 5.5 and 26,143 respectively (Bahrain Health statistics, 2009; 2007). In relation to the high percentage of SCD patient being hospitalized with the cost per patient reflect an enormous economical burden on the health organization therefore the need for interventions programmers that reduce SCD complications such as pain crises could be cost-effective.

1.2 Background

In the past, there was no special in-patient unit for SCD in Kingdom of Bahrain general hospital. In SMC, adult SCD patients were under the umbrella of oncology/hematology department and patients were admitted in the oncology units because some of the health care providers in these units are trained to care of patients with pain and the others have the clinical experience to do so. These patients need a specialized SCD centers to provide specialized high quality of care and adequate pain management afforded by the healthcare providers who are well oriented about the disease disease's management (Adams *et al.*, 2008; WHO, 2006).

Patients with SCD demonstrate significant morbidity and mortality rate. Complications like pain crises, chronic anemia, acute chest syndrome, splenic and

renal dysfunction, priapism and infections have significantly increase the morbidity and mortality rate (Stuart and Nagel, 2004). In Kingdom of Bahrain, the mortality rate for SCD is increasing yearly as it was around 20 cases in 2009 and it reached to 27 cases in 2010 and the cause varies between SCD crisis and other causes (Medical Review Office, 2010; Singh, 2010 b; Singh, 2009). High morbidity rate and recurrent hospitalization may arise from recurrent acute painful crisis (Serjeant and Serjeant, 2004). In United State, the total number of in-patient deaths among adults with SCD in 2004 was 699 cases and SCD with crisis was the principle cause of death in 28% (Steiner and Miller, 2006). Many studies found that the primary cause of death among adult SCD patients was vaso-occlusive crisis (Perronne, *et al.*, 2002; Platt *et al.*, 1994). Al-Suliman *et al.*, (2006) reported that acute chest syndrome was the common cause of deaths among SCD in Saudi Arabia.

In addition, due to the SCD painful episodes crisis, patients may experience frequent hospitalizations, frequent time off school or work and limitation of activities, which has a great affect on patient quality of life (Howard *et al.*, 2009; Izuora *et al.*, 2003).

On the other hand, according to El-Hazmi (1999) and Al Arrayed and Haites, (1995), the genetic disorders have significant impact on the health care delivery system and caused psychosocial burden for the patient, family as well as the community as a whole and accordingly it drains a country's health resources and dramatically affects family and personal life.

In a study by Jamison and Brown, (2002) implementing pain management programme for SCD patients have a remarkable decrease in LOS and AE visits. In

addition, this reflects the needs for proper pain management programme in order to reduce the admission rate of SCD and the length of stay.

By considering all that, the Ministry of Health (MOH) recognized the importance of such unit to appropriately manage the pain, minimize and deal with the life threatening complication. In 2007, MOH launched two dedicated specific inpatient ward for adult patients suffering from SCD with a 40-bed capacity until the SCD inpatients research center is ready. The health care providers in both units need to be knowledgeable and up-to-date about the pain management as it is the main reason for SCD patients being hospitalized. These patients require proper pain management and specialized services afforded by health care professionals who are familiar about the disease and therefore are able to detect their early complications and reduce their suffering in "a timely manner" (Adams *et al.*, 2008).

Nurses play significant role in managing patients with SCD and its related complications. According to Orlando's theory, the nurse can act in two ways: automatic or deliberative. Automatic actions are "those decided upon for reasons other than the patient's immediate need," whereas deliberative actions ascertain and meet this need (George, 2002). The deliberating action of the nurses will depend on the nature of the nurse-patient relationship to assess the patient's verbal or nonverbal behavior that reflects the needs for help and act accordingly. While Orlando's theory simple in nature it "provides direction and focus for identifying, understanding, and meeting the patients' need in a potentially cost-effective manner" (George, 2002). If the patients' needs are identified and met then the nurses need less time to provide the care. In contrast, if the need is not identified then additional care must be provided.

The reasons for choosing this particular topic are increase in prevalence rate, morbidity and mortality rate and recurrent hospital admission of adult SCD patients. Pain is the chief complain of adult SCD patients due to sever occlusive crises. The main challenging issue for the nursing staffs in SCD unit is to be aware of how to control and elevate patient's pain in effective and timely manner. Nursing research examining the knowledge and attitude of the nurse's regarding SCD pain management is limited comparing to those in cancer pain or other diseases. Therefore, more research is needed to assess if nurses in the SCD unit are providing optimal pain management for their patients and if they have the necessary knowledge and attitudes to do so.

1.3 Aim of the Study

The aim of the study is to assess the level of knowledge and attitudes of nursing staff working in sickle cell disease units in Kingdom of Bahrain regarding pain management for adult SCD patients.

1.4 Research Questions

1. What is the nursing staffs' level of knowledge related to pain management for adult SCD patients?
2. What is the nursing staffs' attitude toward pain management for adult SCD patients?
3. Is there a relationship between knowledge of nursing staffs' and their attitude toward pain management for adult SCD patients?

1.5 Significant of the Study

Evaluating the knowledge and attitude of nursing staff about pain management for SCD patients will be the essential first step in assessing the current level of knowledge and attitude and recommending the educational and training programme needed for nursing staffs' to positively change their attitude toward pain management.

The researcher is employed as a senior staff nurse in Haematology SCD adult in-patient ward within the hospital the study take place. In this SCD ward, health care providers deliver treatment for acute and chronic SCD patients. From a nursing perspective, this ward should be considered as a highly specialized and serious environment as the patients may develop crucial complications such as acute chest syndrome and acute splenic infarction. In a SCD ward, the health care professional not only provides care to the patients but also supports their families to overcome any obstacles in providing the care for their patients through providing health education, counseling and social services.

Consequently, it is hoped the study will assess nursing staffs' level of knowledge and their attitudes, regarding pain management for adult SCD patients. The information gained from this study is needed to establishing a specialized teaching programme in SCD pain management. Such programme may lead to cost-effective high quality of care and reduction in mortality and morbidity rate. In addition, it may reduce the length of stay, and admission to the hospital and consequently it may reduce the health care expenditure for SCD treatment and increase the patient/family satisfaction.

1.6 Summary

SCD is a common genetic blood disorder. It is more prevalent in people from African descent but the disease also affects people from Mediterranean and Middle Eastern countries. The clinical manifestations of SCD include episodes of pain crisis, infections, tissue and organ damage therefore it is associated with high morbidity and mortality rate. The exploration of nurses knowledge and attitude regarding SCD pain management is significant due to the increasing the number of admitted SCD patients who experience pain. Moreover, because MOH is in the process of building a SCD unit the nurses need to be knowledgeable and up-to-date about the SCD and the pain management. As far as we know there has been no previous study conducted in Kingdom of Bahrain to measure the nursing staff knowledge and attitude regarding SCD pain management. Nurses and other health professionals' education and training in pain management are significant to increase their knowledge regarding the care of sickle cell patients. The available literatures on this topic will be reviewed in the following chapter.

Chapter 2: The Literature Review

2.1 Introduction

Reviewing the existing literature is essential to identify what is already known about the research topic and identify the gap on the research (Watson *et al.*, 2008).

In this chapter, the search strategy explained in order to identify how the literature was reviewed. Then these literatures organized under subheadings to review the research articles in the topic area.

2.2 Search Strategy

Online multiple database searches were conducted to identify recent publications about the research topic " Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD". This database included Medline, ProQuest, Pubmed and CINAHL. Searches were limited to publication dates those not more than 10 years which ranging from 2000 to 2011 and written in English language. All identified articles were examined and those that were relevant were retrieved for inclusion in the literature review. Reference lists of retrieved articles were hand searched to identify additional publications. Unfortunately, searching in database revealed that there was no research studies have been conducted about SCD in the Kingdom of Bahrain in the last ten years. Therefore, research studies older than ten years were included in the literature review.

The research questions were analyzed for the key words to narrow the search. First of all the search term used was "SCD pain management" then it was narrowed to "Knowledge of SCD pain management", "Attitude toward pain management" and "Knowledge and attitude of pain management". Some of the wordings have been

manipulated for getting different literatures such as about and regarding.

Nevertheless, an abundance of literature exists on the knowledge and attitudes toward pain management in cancer patients.

2.3 Definition of Knowledge and Attitude

2.3.1 Theoretical Definition

Knowledge "expertise and skills acquired by a person through experience or education"(Knowledge, 4 Dec. 2010).

Attitude is a "complex mental state involving beliefs and feelings and values and dispositions to act in certain ways" (The free dictionary, 2011).

2.3.2 Operational Definition

Operational definitions explain how research variables are measured and observed within a study (Polit and Beck, 2008). For the purposes of this study, knowledge and attitude were operationally defined as follow:

The knowledge and attitudes of staff nurses regarding adult SCD pain management is operationally defined as "the nurses' knowledge about assessment, pharmacological and non-pharmacological management of SCD pain". While attitude defined as "The beliefs and values that affect how staff nurses responds or reacts when SCD patients experience pain ". It was measured by McCaffery and Ferrell Nurses Knowledge and Attitude Survey Regarding Pain (KASRP).

2.3.3 Definition of Pain

Although pain is one of the most unpleasant experiences, it is an important symptom of the body. Pain is the most common reason for seeking medical

intervention; many patients suffer from pain caused by disease, surgery, injury or trauma (Ignatavicius and Workman, 2002). The International Association for the Study of Pain defines pain as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (IASP, 2011). This definition attempts to integrate the physiological and psychological aspects of the pain but in the absence of tissue damage or any physiological reasons, many people reported pain and usually this happens because of psychological causes so this definition cannot be applied. Therefore, McCaffery (1977) defined pain as "whatever the experiencing person says it is, existing whenever he or she says it does." McCaffery provides a definition of pain that considers the subjectivity and individuality of the pain experience and it is based on the principle that the individual experiencing the pain is true (Morton *et al.*, 2005). McCaffery pointed out that pain is self-reported by the patient, it is subjective and unique to each patient. Consequently, health professionals should rely on what the patient said and what they detect from their assessment.

Pain is classified as acute or chronic. The acute painful event is the most common type of pain, characterized by an abrupt, unpredictably in onset and intense, it is easily localized. Moreover, it is associated with physiological changes that include increased pulse rate and raised blood pressure (Ignatavicius and Workman, 2002). In contrast, chronic pain is associated with chronic diseases, it has no indefinite period and usually lasts for more than 2 months. Moreover, it is difficult to localize or even describe (Ignatavicius and Workman, 2002). Clarke and Iphofen (2008) conducted a phenomenology study into unseen chronic pain. The finding indicated that the patients with chronic pain are potential for isolation and depression, furthermore the patients feel disbelieved by society and healthcare professionals which results in further distress.

Overall, acute pain differs from chronic pain in terms of etiology and expected duration (Clarke and Iphofen, 2008; Nowak and Handford, 2004).

Pain caused by SCD can be acute, chronic or a mixture of the two (Ignatavicius and Workman, 2002; National Institutes of Health, 2002). Acute pain is the hallmark of SCD, which is associated with vasoocclusion crisis (Niscola *et al.*, 2009). The acute pain of tissue infarction, in skeletal or soft tissue, tends to be sudden, unpredictable in onset and intense (Okpala and Tawil, 2002). Ballas and Lusardi (2005) found that 95% of SCD patient admitted due to acute painful episodes. Acute SCD pain usually relieves after treating the cause.

On the other hand, the chronic SCD pain is not only the pain of vaso-occlusion: "it is usually secondary to avascular necrosis of bone at various joints; the hips, shoulders and ankles, in decreasing order of frequency" (Okpala and Tawil, 2002, P456). Moreover, chronic pain in SCD usually caused by physiological mechanisms and it is defined as "pain that lasts three to six months or more and that no longer serves a warning function" (National Institutes of Health, 2002). Therefore, acute pain related to vasoocclusion crisis while chronic pain is related to SCD complications.

The meaning and reaction to pain differs from individual to another and it is viewed as pain behavior. Pain behavior is classified into involuntary and voluntary responses. "Involuntary responses are not under direct conscious control of the individual" (Cheng *et al.*, 2003, p26). The involuntary responses are non-verbal responses such as heart rate, blood pressure. "Voluntary responses require consciousness and motor activity. Usually these responses contain verbal and non-verbal reactions" as patients may cry or complain of pain (Cheng *et al.*, 2003, p26).

Non-verbal responses may not be strong indication that the patient is in pain for that reason patient himself is more reliable.

Pain assessment and management are considered as an important part of patients' care. The American Pain Society refers to pain as "the fifth vital sign" to highlight its significance and to increase the awareness among healthcare professionals of the importance of effective pain management (Smeltzer *et al.*, 2008). Measuring vital signs give indication about patient health status such as the body temperature and blood pressure although pain is subjective, not objective, there is no specific device to make out if the patient on pain or not. Therefore the patients are asked to rate their pain in a scale from zero to 10. Pain scale is a helpful diagnostic tool developed for the patients to report their intensity of pain. Nurses can use the scale to assess the patient's pain and record it as the fifth vital sign. In view of that, the nurses can evaluate the effectiveness of the pain management.

2.4 Literature Review

2.4.1 Sickle Cell Disease Crisis and Complications

SCD is classified as a hereditary blood disorder that characterized by recurrent crisis pain (Booker *et al.*, 2006). The pain due to SCD crisis is the most common reason for which patients suffering from SCD seek medical help. It is the main cause for SCD patients' recurrent admission into the hospital (Al Arrayed and Haites, 1995). The rigid, abnormal shaped red blood cells cause the SCD pain. These cells are unable to pass through the small blood vessels causing obstruction of the vessels and as a result, it reduces the oxygen supply to the tissue that lead to ischemic injury (Morton *et al.*, 2005). Moreover, it causes inflammation and ischemic organ damage (Nowak and Handford, 2004). The sickle crisis is triggered by different factors such as

hypoxemia, cold weather, dehydration, acidosis, and infections (Nowak and Handford, 2004; Niscola *et al.*, 2009). In Kingdom of Bahrain, a study done by Al Arrayed and Haites (1995) found that the most common factors contributing to crisis in SCD were fever, cold, and vigorous physical activity. The episode of pain per year for SCD patients varies from one patient to another. Smith *et al.* (2008) found that pain episode in adult SCD patients is severe and underestimated because it is measures based on utilization of health care facilities that excluded the short or self-treated pain episodes at home. However, Platt *et al.* (1991) studied the natural history of SCD. The pain rate (episode per year) varied between the studied groups. Moreover, the patient with high rate admission tended to die earlier than with low rate.

Pathophysiological changes and painful crisis in SCD are associated with high morbidity and mortality rate. Due to the short life span of the red blood cell in SCD patients, anemia can occur. Pain crisis in SCD patient may be antecedent life-threatening complications (Platt *et al.*, 2002). One study showed that acute chest syndrome (ACS) in more than 90% of SCD patients is associated with painful crisis and 9.6% of those patients died during ACS attack (Al-Suleiman *et al.*, 2005). Abdominal pain in SCD may reflect a serious complication such as cholelithiasis, splenic sequestration, hepatic sequestration and gallstones (Platt *et al.*, 2002). Rasromani *et al.* (1990) studied the prevalence of cholelithiasis in sixty-five patients with SCD attending a hospital in Kingdom of Bahrain. Ultrasonography was preformed to visualize the gallbladder. Abdominal ultrasound was abnormal in 22 (34%) of the patients; 19 of these (86.5 %) had multiple gallstones and one had a solitary gallstone. These complications can cause death if not diagnosed and managed appropriately.

However, in the absence of objective measures of pain, assessment must be based on what the patient says. Levenson, (2008) write a column reviews the psychiatric issues in SCD. The review of research revealed that unpredictability crises, chronic pain and SCD complications, such as physical deformities, renal failure, strokes, and reduced life expectancy causes symptoms of depression and anxiety in SCD patients.

A study carried out by Levenson *et al.* (2008) measuring the prevalence of depression and anxiety in SCD adults, and their effects on crisis and non-crisis pain, quality of life, opioid usage, and healthcare utilization. Three hundred and eight adult SCD patients asked to complete daily diaries for up to 6 months, reporting sickle cell pain intensity, distress, interference, whether they were in a sickle cell crisis, as well as opioid utilization. The results concluded that the SCD patients reported pain in non-crisis pain days, which revealed that depression seems to have significantly increased pain. Moreover, depression and anxiety predicted more daily pain and poorer physical and mental quality of life. Additionally, one study found that adults with SCD had lower self-esteem than those with HIV/AIDS or cancer (Ehigie, 2003).

Recently Niscola *et al.*, (2009) reviewed data in SCD pain and found that neuropathic pain can be observed in SCD patients. According to Ballas (2007), it needs thorough history and physical examination in order to decide whether sickle cell pain is neuropathic pain.

2.4.2 Pain Management in SCD

Among health care professional, nurses are the one who spend more time with patients and they play an essential role in the management of patient's pain. Therefore, it is crucial for nurses to become knowledgeable and up-to-date in the area of pain management and it should reflect on their practice. Aitken and Patrician (2000, cited

in Lin *et al.*, 2008) suggested that nurse's professional knowledge and skills could improve the quality of care and shorten the length of stay in the hospital. Glajchen (2001) supports this finding as he found that lack of basic knowledge about pain management strategy is one of the barriers obstructing effective treatment of patient's pain. The primary goals of SCD pain management are to keep patients free from pain and reduce complications in order to improve their quality of life. Unmanaged pain has become a focal area of concern for many health care professionals

The character of SCD pain is often poorly understood and difficult to managed by health professional because of the subjectivity of the pain, absence of objective measures and reluctant of health professional to administer opioid analgesia (Wright and Adeosun, 2009; Geller and O'Connor, 2008; Booker *et al.*, 2006; Okpala and Tawil, 2002).

A multidisciplinary team of professionals who deliver comprehensive care best manages people affected by SCD, it is "a model of healthcare based on interaction of medical and non-medical services with the affected persons" (Okpala, 2002). This comprehensive care includes patient/family teaching, counseling, social services, dietary advice, psychotherapy, physiotherapy, other medical care specialist, orthopaedic and general surgery. Although the nurses in such team have the authority regarding patients care but the power and final decision of the care will be decided by the Consultant Haematologist.

The comprehensive care given to the SCD patients will lead to high quality of care and reduce mortality and morbidity rate by early detection of any complications. In addition, it may reduce and shorten the length of stay and admission to the hospital and therefore increase the patient/family satisfaction.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) pain management standards require all organizations to determine and assure staff competency in pain assessment and management (Berry and Dahl, 2000). Consequently, understanding what the nurse's know about pain management in SCD and their attitudes towards the patients' pain is the first step to identify any strategies to improve nursing care. Moreover, accomplish any obligations to improve the quality of care and enhance the pain management strategies for all the patients suffering from SCD.

Unfortunately, the pain management of SCD requires opioid therapy, which likely leads to drug dependence or addiction. Okpala and Tawil (2002, p458) support this by stating that "*Pointers to dependence are a patient's insistence on determining the dose and timing of an addictive drug without caring as much about antibiotic or other therapy, incessant objections to dose reduction considered medically appropriate, and frequent demands for dose increases especially after working hours*".

Pain is self-reported by the patient so health care professionals should reliable on what the patient said (McCaffery and Robinson, 2002). Effective pain management depends on a trusting relationship between patient and the health care providers, and the breakdown of that trust may influence patient's pain coping in ways that could escort to "concern-raising outcomes" (Elander *et al.*, 2004). This principle may be difficult to apply in clinical practice as some SCD patients, for example, will receive opioid drugs every four hours for more than two weeks because they are still complain of pain and this could be dangerous to accept. Even though, in SCD pain management individualized treatment is required because the patients differ in their clinical presentation and response to medications (Udezue and Girshab, 2005).

2.4.3 Perceptions about Pain Management

The correct diagnosis and effective treatment of pain is an important public health concern. Millions of people in the world with severe acute or chronic pain suffer because of the ignorance of doctors and the lack of a "standardized scientific approach" (Kumar, 2007). Treatment of painful crises in SCD is sometimes complicated by the disagreements between patients, staff, and patient behaviors that raise concerns about analgesic misuse. "Those concern-raising behaviors could indicate either drug seeking caused by analgesic dependence or pseudoaddiction caused by under treatment of pain" (Elander *et al.*, 2004).

Shapiro *et al.*, (1997) reported the results of a survey sent to hematologists and emergency department (ED) physicians regarding their perceptions and practices concerning pain and its management. Hematologists and ED physicians differed considerably in their perceptions about the natural history of the pain, and about the percentage of patients who are addicted to analgesics. Fifty-three percent of the ED physicians and 23% of the hematologists thought that more than 20% of patients are addicted. Another study, conducted by Waldrop and Mandry (1995), to determine the percentage of patients perceived by health professionals to be opioid dependent among all patients presenting with pain and specifically among sickle cell patients with pain. The study showed that staff estimates of the prevalence of opioid dependence were twice as high for SCD patients than for patients with other painful conditions. Patients with SCD have frequent admissions to the hospital due to the painful crises, for that reason, nurses working with SCD patients are reluctant to administer opioid medicines because of the fear of opioid dependence. The influence of nurses' attitudes on the management of sickle cell pain was studied by Pack-

Mabien *et al.* (2001) revealing that 63% believed addiction was prevalent, and 30% were hesitant to administer high-dose opioids.

2.4.4 Barrier to Effective Pain Management in SCD

Numerous barriers to adequate pain management have been identified in the literatures (Salinas and Abdolrasulnia, 2011). A review of the literature aimed at examining the management of vaso-occlusive pain in SCD revealed that manifestation of vaso-occlusive pain, sociocultural and the concerns regarding addiction are the three main barriers to effective pain management in SCD (Wright and Adeosun, 2009).

Booker *et al.* (2006) conducted a qualitative focus group study to understand the barriers that SCD patients face during their pain management. The data indicated that disbelieved of the health care professional and the lack of knowledge they have about SCD consider a barrier for seeking treatment when they were in genuine pain. This was consistent with the data derived by Kohr and Sawhney, (2005) when they asked the participants to identify barriers to pain management, 83.6% found that insufficient education of nurses was a barrier to improve treatment of pain.

Elander *et al.* (2006) examined the hospital staff judgments about patients on pain. The finding showed that certain pain behaviors influenced the staff judgments about patients with SCD, therefore it contributory cause of inadequate hospital pain management. In order to understand patients' behaviour the health care professional should communicate with their patients. Poor communication considers one of pain the barriers to the appropriate pain management. Thomas and Cohn (2006) highlight the important of communication skills between SCD patients and health care professional to overcome suspicion and mistrust in pain management practice.

Therefore, improve the communication between patient's and health care professionals lead to patient satisfaction and good pain management practice.

2.4.5 Knowledge about Pain Assessment

Pain is used as the fifth vital signs for better pain assessment and management. Accurate pain assessment will enhance a health care professional's ability to achieve pain relief and improved pain management practice. Therefore, health care professional should have thorough knowledge about pain assessment, pain assessment tools and pain management. Reviewing the literature revealed that lack of pain assessment knowledge considered as one of the pain management barrier.

Fielding and Irwin (2007) conducted a study in Hong Kong to assess the pain control knowledge among interns and nurses with acute surgical care experience and explore staff perceptions of barriers to acute postoperative pain control. They found that nurses and some interns identified problems in the assessment of pain and many seemed to rely on their judgment of patient expression and complaints to guide pain management.

Strode and Seimane (2011) conducted a study on 309 nurses working in surgical wards to study the usage of postoperative period pain intensity and quality assessment scales in the clinical practice as well as availability of these methods. Nurses recognized that pain evaluation scales were rarely used in pain assessment. Moreover, only 5% of nurses utilize visual analogue scale, 22% used verbal pain scale and 16% numerical pain rating scale, while 98% of respondents mention pain assessment as a constituent of nursing.

Discrepancies between patients and nurses pain assessments are shown in some studies. Puntillo *et al.* (2003) asked patients to rate their pain intensity in triage. Separately, the triage nurse was asked to rate the patient's pain then different nurses were also asked to rate patients pain in the clinical area within the emergency department by using a 0 to 10 numeric rating scale (NRS). Significant underestimation of patient's pain occurred in both triage and in the clinical area. They concluded that minimizing patient- nurse discrepancies in pain intensity ratings through careful evaluations and acceptance of the patient's self-report of pain are important first steps in improving pain management.

2.4.6 Knowledge of Pain Management

To assess the nurses' knowledge about the management of acute pain, Kaki *et al.* (2009) conducted a study in a tertiary hospital in Jeddah, Saudi Arabia. They found that the nurses were more likely depending on self-report of pain from the grimacing patients rather than smiling one as an indicator of pain. Nurses showed an exaggerated fear of addiction to opioid analgesia. Similar study completed by Tanabe and Buschmann (2000) through a mail survey to determine areas of emergency nurses' knowledge deficit regarding pain management. A questionnaire was mailed to all members of Illinois Emergency Nurses Association. Results indicated that the nurses had a significant knowledge deficit on two areas which includes understanding of the terms "addiction," "tolerance," and "dependence"; and knowledge of various pharmacologic analgesic principles. In addition, the researchers found that nurses with a master's degree or higher, or those who attended a one-day seminar on pain management, achieve statistically significantly higher scores. The authors concluded that the emergency nurses might not have a good understanding of the pain management drugs or of such issues as fear of addiction.

Coulling (2005) study was performed to examine the relations between knowledge levels of acute pain management, perceptions of clinical skills and the acute pain management education history. The questionnaire was sent to doctors and nurses working in orthopaedics and general surgery. Result shows Nurses were more knowledgeable than doctors specifically in assessment and analgesic delivery systems, whereas doctors were more knowledgeable in pharmacology. Inadequate staff knowledge and staff opioid phobia were found to be a barrier to good pain management. On the other hand, Wilson (2006) found that the specialist nurses had a more comprehensive knowledge base than the general nurses did; however, their knowledge scores did not appear to be related to their experience in terms of years within the nursing profession.

2.4.7 Attitudes about Pain

Labbé *et al.* (2005) conducted a survey to assess the physician' attitudes and practice towards management of SCD patients acute pain episodes. The participants reported that they disagreed with the patient's self-report of intensity of pain to be the most reliable indicator of the existence of pain. In addition, there was a correlation between attitudes towards pain and beliefs regarding addiction to prescribed opioids. Also there was some relation between some demographic variables (sex and year graduated from medical school) and physicians attitudes regarding pain and addiction. In contrast, Pack-Mabien *et al.* (2001) studied the influence of nurses' attitudes on the management of sickle cell pain. Age, education and years of experience were found to influence nurse's attitudes and practice towards sickle cell pain management. Furthermore, 63% of the nurses believed addiction was common in SCD patients, and 30% were hesitant to administer high-dose of opioids. Overall, 59% of the

respondents reported that inadequate pain assessment tool is one of the barriers in the pain management. Both study findings suggest that physicians and nurses would benefit from additional education on sickle cell disease pain management and addiction.

More specifically Broekmans *et al.* (2004) investigated nurses' attitudes toward pain treatment with opioids in a Belgian university hospital. The results revealed that nurses had clearly negative attitudes towards the use of opioids as they considered addiction to be a side effect of long-term use of morphine particularly during the diagnostic phase of acute pain. These finding indicated that negative attitudes could hinder adequate pain treatment.

2.4.8 Studies combining Knowledge and Attitudes of Pain Management

McMillan *et al.* (2000) studied the knowledge and attitudes of 124 nurses in oncology units bout pain management. Physiology of pain and pharmacology of analgesics found to be the area of major knowledge deficit. Despite their knowledge deficit in these areas, they were knowledgeable about the importance of asking patients about their pain. Moreover, nurses had negative attitudes regarding "around-the-clock" analgesics because of fear of sedation and respiratory depression. A survey of healthcare providers working on the inpatient oncology units done by Xue *et al.* (2007) to evaluate their attitudes and knowledge toward pain management. The main finding was that the respondents reported positive attitudes toward pain management. Nevertheless, they showed deficient in their knowledge of pain management.

Lui *et al.* (2008) conducted a cross-sectional study to investigate the level of knowledge and attitudes regarding pain management for the nurses working in medical units and the factors that might influence their knowledge and attitudes. The

finding highlighted a prominent knowledge and attitudes deficit in pain management. Moreover, the finding revealed that discrepancies between practice and attitudes exist between the nurses. Al-Shaer *et al.* (2011) conducted a recent study to assess the nurses' knowledge of pain assessment and interventions. A convenience sample of 129 registered nurses (RNs) from 10 separate nursing units was asked to answer modified version of Nurses Knowledge and Attitude Survey Regarding Pain (NKAS). Nurses in this study were above average in their knowledge of pain assessment and management nevertheless the nurses from oncology units scored significant higher in knowledge survey compared with nurses from other units. Moreover, no statistical differences existed in knowledge scores with respect to shift worked, work status, age category, and total years of nursing practice.

In Italy, Visentin *et al.* (2001) conducted a study as part of a hospital project, "Towards a Pain-Free Hospital". The aim of his study was to evaluate the knowledge and attitudes of doctors and nurses working on the wards. The results showed that still knowledge deficit and fear about the adverse effect of opioids existed among the participants.

As all of the studies, which were reviewed, recommended enrolling the nurses in pain management educational programme, Matthews and Malcolm (2007) found that there were no significant variations between the nurses who completed pain management programme and those who had not completed the programme. Conversely, Erkes *et al.* (2001) conducted a quasi-experimental study to highlight the important of educational intervention on pain management. The results support the previous research findings that associated with the problem of inadequate pain

management. However, there was a significant increase in the total score of the nurses after the educational intervention.

2.5 Methodological Issues

Research methodology can be either quantitative or qualitative. The research objective will direct the researcher to the methodology that will be adopted in his research. A quantitative method is a branch from positivism theoretical perspectives (Watson *et al.*, 2008). The majority of the studies reviewed were quantitative research. They used surveys to answer the research questions. Lui *et al.* (2008) and Broekmans *et al.* (2004) conducted a cross-sectional study. Whereas Erkes *et al.* (2001) adopted a quasi-experimental design to examine the difference between the two groups of his sample. In some studies, the research methods were not clearly stated but it could be revealed as quantitative method because descriptive statistics were used to analyze the data.

The entire studies used convenience sample to answer the study questionnaire except Wilson (2007) used a stratified sampling to divide the sample into two groups, and Broekmans *et al.* (2004) used random sampling.

'Nurses' Knowledge and Attitude Survey Regarding Pain' was used as a study instrument by most of the studies that involve nurses. Broekmans *et al.* (2004) used a structured questionnaire to suit cancer pain.

A small sample size that could not represent the population was the identified limitation in the majority of the reviewed studies. In McMillan *et al.* (2000) study using of instrument that was not tried in other studies consider one of the limitation to their study.

2.6 Summary

Existing literature about pain management reveals a research gap in the knowledge and attitude of staff nurses regarding SCD pain management especially in Middle East countries. Limited studies about knowledge and attitude regarding SCD pain management was found therefore other research studies in pain management was reviewed. In conclusion, nearly all of the literature reviewed revealed that there were nurses' knowledge deficits in the areas of pain assessment, pain management and negative attitudes toward administering opioid drugs. These finding may hinders effective pain management that provided to the patients. Therefore, it is crucial to assess the nurses' knowledge and attitudes regarding SCD pain managements in order to achieve high quality of care and patients satisfactions.

Chapter 3: Research Design: Methodology and methods

3.1. Introduction

In methodology chapter, the researcher pictures his/her research in order to justify each steps and methods used to answer the research question (Watson *et al*, 2008).

This chapter includes a description of the research paradigm, philosophical underpinning, setting, sample and the research instrument. It also includes a study procedure, data collection, methods of statistical analysis and the ethical considerations for protection of human subject.

3.2 Research Paradigms/ Philosophical Underpinnings

Since the time of Nightingale, nurses borrowed theories from other discipline in order to apply theoretical knowledge into practice (Weaver and Olson, 2006). Therefore, attention has been directed to construct and draw theories about particular phenomena through the induction and deduction of knowledge (Parahoo, 2006). These perspectives lead to emerge of nursing paradigms.

Paradigms is a worldview about sets of beliefs and practices, that shared by group of researchers (Schneider *et al.*, 2007; Weaver and Olson, 2006). Nursing paradigm is the base for any researcher to build up knowledge that successfully support the researcher and enrich the research subject that will be studied. The paradigm aid the researcher to identify his research questions and consequently it make difference in each part of the research process (Royal College of Nursing, 1999). In nursing, there are two widely used paradigms, which have legitimacy for research, the positivist and naturalistic paradigm.

The Positivist paradigm, dominated nursing research for decades (Polit and Beck, 2008). The positivist paradigm is related to cause and effect and look for explanation in empirical data, hence it reflects reality and scientific facts (Schneider *et al.*, 2007). Moreover, positivist is about study of social phenomena and human concepts that are often not amenable to objective measurement (Parahoo, 2006).

The principle of this paradigm depends on objective reality that can be obtained through planned, orderly and rigorous method (Polit and Beck, 2008). The research approach that comes under this paradigm is experiments and surveys. In experiment, the research wants to explore cause and effect relationships by comparing two groups, while in surveys aim to measure attitudes, knowledge and behaviours by using questionnaire or structured interviews (Royal College of Nursing, 1999). Moreover, in this paradigm the research tends to focus in one aspect of the studied subject instead of taking the holistic view (Parahoo, 2006). In addition, Johnson and Onwuegbuzie (2004) articulate the advantages of the positivist research like the use of standardized data collection method and the finding is statistically analyzed by applying numerical data, which is considered less time consuming and it is useful for large sample size. I believe that all research methods are valuable if used appropriately; it is not the matter of one method being better and most useful than the other, the methods should tailor the research aim and answer the research questions.

3.3 Research Design

The purpose of the research design is to provide the plan for answering research questions. Polit and Beck (2008, p15) stated that research methods are "techniques researchers use to structure a study and to gather and analyze information relevant to the research question". Research methods can be either qualitative or quantitative. The

research question will direct the researcher to the methodology that will be adopted in his research (LoBiondo-Wood and Haber, 2006). Since the quantitative research is emphasized on the measurement and analysis of underlying relationships between variables, therefore the research design selected by the researcher for the study is quantitative approach. This design facilitates the research for new knowledge about attitude toward management of pain in adult SCD patients.

The quantitative research is linked with the positivist paradigm that used the numeric data for the analysis of the findings (Watson *et al*, 2008; LoBiondo-Wood and Haber, 2006). Moreover, the quantitative design in research is for hypothesis testing or answering research questions (LoBiondo-Wood and Haber, 2006, p202). In this study, positivist perspective have been chosen as quantitative descriptive research method. It was used to extract the participants' knowledge and attitudes regarding pain management. In a descriptive study, no attempt will be made to change behavior or conditions; things are measured as they are. Since the focus on this study is on assessing the nurses' knowledge and attitudes and the influences of the demographic data, the relation between the variables will be measure throw the cross-sectional studies to examine data at one point in time with the same subjects. Linking this to the literature about pain management in general, the majority of the studies reviewed were quantitative research. They used surveys to answer the research questions. Lui *et al*. (2008) and Broekmans *et al*. (2004) conducted a cross-sectional study. Whereas Erkes *et al*. (2001) adopted a quasi-experimental design to examine the different between the two groups of his sample. In some studies, the research methods were not clearly stated but it could be revealed as quantitative method because descriptive statistics were used to analyze the data.

3.4 Population, Sample and Sampling

3.4.1 Population

A population is the entire aggregation of subjects in which a researcher is interested (Polit and Beck, 2008), which has specific characteristics (Schneider *et al.*, 2007). In any research, it cannot be done without a population. This population can be human, file, or even a blood sample (Polit and Beck, 2008; Nieswiadomy, 2010). The researchers cannot make direct interpretations of every individual in the population "target population" they are studying. As a substitute, they collect data from a sample of individuals "accessible population" that represent the population and use those interpretations to make assumptions about the entire population (Parahoo, 2006; Nieswiadomy, 2010).

3.4.2 Sample and Sampling Methods

Sample is the subjects who will be included in the study when it is not possible to include the entire population (Parahoo, 2006). The process of selecting a proportion or subset of the population to represent the entire population is known as Sampling (LoBiondo-Wood and Haber, 2006). There are two types of sampling: probability and non-probability. The non-probability sample includes convenience, quota and purposive (Schneider *et al.*, 2007) in which the researcher chose his subjects by nonrandom methods (Nieswiadomy, 2010). For the purpose of this study, the sample was obtained using non-probability convenience sampling. A convenience sampling is the "use of the most readily accessible persons or objects as subjects in a study" (Schneider *et al.*, 2007). A non-probability convenience sample of 30 staff nurses working in ward A and B was selected for this study. These nurses received introductory information about the study purpose, questionnaire inclusion and

exclusion criteria, and the voluntary to participate and withdraw from the study at any time.

3.4.3 Criteria of the Sample

Nurses were identified by the researcher and contacted in person to participate in the study. These nurses, who are included in the study; working in this hospital under the umbrella of the MOH. The total numbers of nurses in both wards were 36. The inclusion criteria for the sample to enter the study were as follows: (a) working in ward A or ward B, (b) has at least one year of working experience as a staff nurse, (c) has at least 3 months of working experience in SCD ward, (d) are able to understand, read and write English. Subject who met the inclusion criteria and chose to participate were recruited for the study.

Since the target population is nurses working in SCD ward, not only caring of SCD patient therefore the nurses in ward A and B is my accessible and target population as there is no other wards in SMC or other hospital are specialized in SCD for that reasons the finding can be generalized.

3.5 Setting of the Study

The study took place in ward A and B of a general hospital in the Kingdom of Bahrain. It is the largest governmental teaching hospital in the Kingdom of Bahrain. It is a multispecialty health care facility providing emergency, secondary and tertiary care to all citizens and residents of the Kingdom of Bahrain. It provides a wide range of subspecialties services and hematology is one of these specialties. In the past, the hematology was under the oncology department and the hematology in-patients were admitted in the same wards. As the demands for providing high quality care for SCD

patients have increased, ward A and B were designed to provide adult care services for SCD in-patients. Therefore, both wards were the study setting because no other hospital in Kingdom of Bahrain has a specialized ward for the management of SCD in-patients. Nevertheless, due to the shortage of beds in both wards and increase the number of SCD patients, whom need hospitalization these patients may get admission in other wards that provides treatment for other specialties such as surgical or medical but A and B remain the main service for those patient. Male adult patients with SCD are admitted in ward A and the female adult patients are admitted in ward B. The bed capacity for both wards is 22 beds.

3.6 Data Collection

Data collection is the process and procedures that explained the steps how the researcher collect his data it may includes the time required, effort and risk involved (Watson *et al*, 2008). Data collection is about what, where, when, how, who questions that shape the research methods (Nieswiadomy, 2010). In quantitative research the data collection done in a structured way using instruments, questionnaire or bio-physiological measures (Watson *et al*, 2008). These data could be existing data or originated data (Polit and Beck, 2008). Existing data is the data obtained from records such as patient file, nursing record, and care plan that already accessible for the researcher, while original data is the data that is not available for the researcher in the records (Polit and Beck, 2008).

3.6.1 Data Collection Procedure

Permission was obtained from the Research Ethical Committee (REC) of the university prior to starting the research (Appendix 1). Then permission from the hospital ethical committee in which the study took place was obtained before

commencing the research (Appendix 2). After getting the permission, 36 copies of the questionnaire was photocopied. Each questionnaire was accompanied with a covering letter to explain the study to participants (Appendix 3). The covering letter contained information about the researcher intent, the purpose of the study and instruction for the participants. It is also contained a copy of a consent form to be sign by each participant agreeing to partake in the study (Appendix 4). Before distributing the questionnaire, a permission to access the wards was obtained from the nursing administration (Appendix 5). The researcher distributed the questionnaires to the nurses in ward A and B. Nurses were instructed to place the completed questionnaires in a sealed envelope kept in the ward supervisor office. Reminder was send through the ward supervisors to the nurses in both wards to complete the questionnaire and place it in the envelop design for that. The researcher collected all envelops later on. The data collection procedure took around three weeks from mid of January to beginning of February.

3.6.2 Research Instrument

In quantitative study, the researchers used different measuring instruments to measure the study variables (Schneider *et al*, 2007). Nieswiadomy (2010) describes different types of data collection instruments such as interviews, questionnaires, observations and records. Each measuring instruments have advantages and disadvantages.

In this study, the researcher used questionnaire as a research instrument. Questionnaire is an instrument used to collect specific written data on facts, attitudes, knowledge opinions or perceptions from the subjects without the effect of the researcher (Parahoo, 2006). The questions formats in this type of instruments can be

vignettes, rating scales, open-ended or close-ended questions (Schneider *et al*, 2007). Parahoo (2006) explains the advantages of questionnaire as it can be given to large numbers of study subject with lower cost and allow the respondents to answer in their own time. On the other hand, one of the serious disadvantages of this type of instruments is the low response rate from the subjects.

In this study, the data was collected using Knowledge and Attitude Survey Regarding Pain (KASRP). It is a self-administered questionnaire, which includes two sections: 1) the demographic data sheet, which is developed by the researcher and it includes the following: Nationality, age, education level, years of experience, attendance of any courses dealing with pain; and 2) the nurse's knowledge and attitudes survey about pain management in SCD (Appendix 6).

3.6.3 Knowledge and Attitude Survey Regarding Pain (KASRP)

Knowledge and Attitude Survey Regarding Pain (KASRP), was developed by Betty Ferrell and Margo McCaffery in 1987. This questionnaire is specifically designed to assess health care professionals in any health setting and as a pre and post test evaluation measure for educational programs. The tool is accessible online at the City of Hope Pain Resource Center with the permission from the authors (Ferrell and McCaffery, 2008). It was revised several times before and the last revision was in April 2008. The KASRP is a self-administration questionnaire composed of 38 items divided into two main sections. The first section is twenty-two true and false questions, the second section consists of fourteen multiple-choice questions, and two case studies, each case study have two questions (Appendix 7). The questionnaire contents was designed and aimed to assess knowledge and attitude to pain management for different health problems in different health settings thus the content

includes aspects of pain assessment, pharmacological and non-pharmacological interventions and attitudes about pain management. The questionnaire items were related to pain in cancer, trauma or postoperative therefore it has been used extensively in research and modified according to the study subject and interest which suite the researcher culture and area of practice (Lui *et al.*, 2008; Matthews and Malcolm, 2007; Broekmans *et al.*, 2004; Erkes *et al.*, 2001; McMillan, 2000; Brown *et al.*, 1999) . In Kingdom of Bahrain, for the purpose of master studies, Awadalla (2002) have used KASRP questionnaire after modifying it for nurses working with cancer patients and Al Maran (2007) used it to assess knowledge and attitudes toward postoperative pain management.

Consequently, for the purpose of the study the questionnaire items were modified to answer the research questions and to be congruent with SCD pain management in Kingdom of Bahrain. Betty R. Ferrell permission and opinion was taken after modification has been done to the questionnaire (Appendix 8). The modifications were made to change some of the wording and analgesia medications as the follows:

True and false questions:

- Questions 2, 8, 14, and 18 were omitted because it is not within the research interest of study.
- Question 5: Aspirin changed to Naproxin and bone metastases changed to SCD crisis.
- Question 9: hydroxyzine (Vistaril) removed, as it is not used for SCD in Kingdom of Bahrain and the word "potentiators" clarified more in another meaning by adding "to increase effect".
- Question 13: the word "endure" change to "tolerate" for more clarification.

- Question 20: gabapentin (Neurontin) drug was changed to lyrica (pregabalin) as it is not used for SCD patients.
- Question 21: Benzodiazepines replaced by Valium to be more specific.

Multiple-choice questions:

- Questions 23, 28 and 33 was omitted as it cannot be applied for SCD pain management
- Question 24: "trauma or postoperative pain" changed to "SCD pain"
- Question 25: the word "cancer patients" changed to "SCD patients".
"Codeine" is not used for SCD patients in Kingdom of Bahrain so changed to "Sosegon"
- Question 27: "post-operative" changed to "SCD"
- Question 30: "Cancer" changed to "SCD". "Hydromorphone (Dilaudid)" replaced by "MST" and "Gabapentin (Neurontin)" with "Lyrica (pregabalin)"
- Questions 37 and 38: patients name was changed to Arabic names and the dose of the Morphine changed according to the practice in Kingdom of Bahrain.

After modifying the tool, the total number of items in the tool was 33, 18 true or false questions, 11 multiple choice and 4 case studies questions.

3.7 Reliability and Validity

In Research, using instruments to collect the data is essential and finding the right one is not an issue today than it was years ago. Nevertheless, the challenge for any researcher is finding the right research instrument. A research instrument must be evaluated for both validity and reliability before using it in any research.

3.7.1 Reliability

Reliability is used to measure the consistency of an instrument to give the same result of target attribute (Macnee, 2004). According to Watson *et al*, (2008) it refers to the understanding and responding of the participants to the research questionnaire. Nevertheless, Nieswiadomy (2010) emphasize that the reliability of the instrument must be assessed continually as it is used with different subjects and different occasions. Polit and Beck (2008) identify three ways to assess the instrument reliability, which relate to, stability, internal consistency and equivalence. The stability of an instrument is the extent to which similar results are obtained on two separate occasions (Polit & Beck, 2008). It is an easy approach to estimating reliability and can be used with self-report questionnaire. The index for the reliability test is the correlation coefficient, which used to measure whether or not a relationship exists between two variables.

Internal consistency reliability addresses the extent to which all instrument items measure the same concept of interest (Nieswiadomy, 2010). Coefficient alpha is used as an index to measure the extent to which the items in an instrument are reliably measuring the attribute of the variables (Polit & Beck, 2008). The normal range of the coefficient alpha is between .00 and + 1.00, the higher value reveal a higher internal consistency.

Moreover, McCaffery and Ferrell (2008) have reported the following psychometric properties with respect to reliability and validity of the instrument. It was tested for reliability by repeat testing in a continuing education class of staff nurses (N=60). The instrument stability was assess through test-retest reliability

($r > .80$). Likewise, internal consistency reliability was established ($\alpha r > .70$) with items reflecting both knowledge and attitude domains.

3.7.2 Validity

Validity refers to the extent to which an instrument measures what it is expect to measure in order to answer the research question (Polit & Beck, 2008). Macnee (2004) state the instrument consider valid if it measures accurately and correctly what it is proposed to measure. According to Nieswiadomy (2010) the content of the instrument is very important in validity. Therefore, any quantitative research instrument should be tested to evaluate it is validity. Measuring validity has different assessment approach such as content validity, face validity, criterion related validity.

Content validity is an approach to measures the degree to which the instrument items represent the domain of interest or attribute being measured (Polit and Beck, 2008). Ferrell and McCaffery (2008) maintained the validity of KASRP tool by asked group of experts in the field of pain management to review and validate the content of the tool.

Moreover, for the purpose of this study the researcher concentrated on face validity, which is related to the clarity of the items to measure, what it is expected to measure (Macnee, 2004). Face validity examined by consulting an expert on the subject to be studied or using people with the same characteristic of the prospective subject (Nieswiadomy, 2010). To safeguard the study instrument the researcher consult a senior hematologist doctor in order to evaluate the clarity and the content of the modified instruments as it was explained in pilot study section.

Seeing this we can say that reliability and validity are related to each other. Therefore, in any study, the researcher must ensure that the research instrument is reliable and valid. Even though the instrument can be reliable without being valid but it cannot be valid without being reliable (Polit & Beck, 2008; Nieswiadomy, 2010; Macnee, 2004).

In this study, a senior hematologist and an expert in SCD management and working in the same study setting hospital did content validity for the modified questionnaire. He reviewed the modification that was done especially on the medications. In true/false questions, four questions were omitted because it is not applicable for SCD pain management in Kingdom of Bahrain. Moreover, three multiple-choice questions were omitted for the same reason. The medications dose was altered according to the practice in Kingdom of Bahrain.

3.8 Pilot Test

The pilot study is done before starting the data collection. Performing a pilot study is essential to determine the feasibility of the study as a whole or to test the reliability of the questionnaire or the data collection procedure (Watson *et al*, 2008). The ideal way to do the pilot study is by choosing a sample have the same study sample criteria and doing the same study step that planned to be done (Watson *et al*, 2008). Thus performing a pilot study is crucial to overcome any defect in the research process or instruments.

Then the questionnaire was given to a small group (3 nurses) with the same characteristics of the target sample as they are working as staff nurses for more than 10 years and they worked in SCD ward for two years but recently they left the SCD ward to other area. Nurses were asked to respond to all questions, marking those that

may be difficult or ambiguous and the length of time needed to answer the questions. The pilot study results shows that the questions were clear and no ambiguous words. Regarding the time needed to answer the questions 2 nurses took 30 minutes and 1 took 25 minutes therefore the time was altered to 25-30 minutes for each participants to answer the questionnaire. However, while distributing the questionnaire the nurses was encouraged to take their time to complete the questionnaire and return it back when they have done.

3.9 Data Analysis

Data are the information the researcher has collected, accordingly the next step after collecting the data is to analyse it to achieve a research conclusion. Therefore, data collection is not the end of research, as the researcher has to analyse this data (Watson *et al*, 2008). Data analysis in quantitative studies is concerned with the relationships between the variables (Watson *et al*, 2008). A variable is the characteristic of interest or research problem that varies among people or situations (Macnee, 2004; Polit & Beck, 2008). Each item in the research questionnaire consider as variables since it will be differ from one subject to another. These variables can be either quantitative or qualitative but all variables will be coded into numeric form and enter directly and stored in the Statistical Package for Social Scientists (SPSS) program version 18. Macnee (2004) highlights the important of using a codebook to label, describe and document the questions asked in the study. This codebook will provide the researchers with crucial details to help them know how each variable measured, reviewed and transferred into computer files (Macnee, 2004). Moreover, it will help to overcome any problems such as incomplete responses or confusing responses (Macnee, 2004).

As we said earlier, this research is a quantitative approach and it is deal with numeric data, therefore, the statistical analysis helps to interpret and organize the data collected. The statistical analysis in quantitative data is either descriptive statistics or inferential statistics (Nieswiadomy, 2010; Polit & Beck, 2008; Watson *et al*, 2008).

The research data will undergo descriptive statistical analyses in order to be able to answer the research questions. Descriptive statistics is the first step in data analysis as it describes or summarizes the data so that the reader can create a picture of the data and the objects they relate to (Polit & Beck, 2008; Watson *et al*, 2008).

In this study, the demographic data was summarized by using descriptive statistics: percentage and central tendency. The data was presented in forms of tables and graphs that illustrate the findings. There are three commonly used measures of central tendency: the mean, median and mode. Each one plays a different role in determining where the average of response or the distribution score lies (Macnee, 2004).

On the other hand, the inferential statistics is used to reflect and generalize the findings to the population or testing hypotheses (Nieswiadomy, 2010). As it was stated before, the study sample is the population of the study area therefore in the study the inferential statistics will be used to test hypotheses.

The percentage of correct scores as well as incorrect answers will be calculated and used to examine the knowledge of pain among nurses working in SCD wards. Stepwise regression and t-test will be used to explore the independent factors affecting knowledge and attitudes in relation to pain management.

3.9.1 Scoring

Since the questionnaire is similar to a test, all the questions were equally weighted. A value of one is given for each correct answers and a zero for incorrect. Unanswered questions were considered as zero. Total score ranged from 0-33 and the total score was calculated using the number of correct answers.

3.10 Ethical Considerations

The ethical considerations issues should be addressed before, during and after conducting the research (LoBiondo-Wood & Haber, 2006). Before conducting the research, ethical approval was obtained from the Research Committee at the Royal College of Surgeons in Ireland, Medical University of Kingdom of Bahrain by submitting an application form with the research outline detailed. Subsequently, another approval was obtained from the Research Committee within the hospital setting. A consent sheet was provided to all nurses individually for their permission to be involved in the study. They were informed about the purpose of the study, there will not be any direct benefit or harmful for participation and they have the right to withdraw at any time.

3.10.1 Autonomy

The researcher took into consideration the rights of the individuals to either participate or not. Each nurse was given the opportunity to decide to participate voluntarily by signing the consent form or by completing the questionnaire. In addition, the researcher gave sufficient time to the individual to read the information sheet and ask any questions for more clarifications.

3.10.2 Anonymity and Confidentiality

Schneider *et al.* (2007) stated that the identity of the individual must be ensured and even the researcher will not be able to identify them.

Confidentiality and anonymity were maintained throughout the study. There was no identification of the nurse's name or specific age, which can identify them.

Moreover, in order to prevent identifications of nurses there were no code or numbers assigned to the questionnaire. After collecting the questionnaire, information was not passed on to any other person. The nurses were informed that the questionnaire will be used for the study purpose only and it will be destroyed after that.

3.11 Summary

This chapter outlined the research paradigms and methodology that have been applied to evaluate the staff nurses knowledge and attitudes regarding pain management in SCD units. The justification for selection of positivist, quantitative research methodology was explained as well. The characteristics of the study population and sample were provided with the process of sampling methods. Furthermore, a detail about the data collection instruments and the procedure was provided with the emphasize on the validity and reliability of the research instrument. The statistical methods used for data analysis of the findings were explained. The ethical issues that may raise during the study were outlined with the consideration of subjects rights.

4.3 Demographic Data

A total of four variables were analyzed to describe the study participants' demographic characteristics. The variables were as follow: (1) age range, (2) nationality, (3) level of education, (4) and years of working experience. One more variable was analyzed to determine participants' attendance to pain management courses, or workshop conference on SCD pain management. The demographic characteristics of the sample are summarized in Table 2.

4.3.1 Age Range

The age distribution of the staff nurses were revealed that seventeen staff nurses (56.7%) were between 31-40 years old and eight staff nurses are more than 40 years old (26.7%). Moreover, only five (16.7%) staff nurses were between 21-30 years old in both wards.

4.3.2 Nationality

The majority of staff nurses in the sample in both wards were non-Bahraini (n = 19, 63.3%); 11 were Bahraini (36.7%).

4.3.3 Level of Education

The majority of the staff nurses who responded to the questionnaire held diploma in nursing 80% (n = 24). Only Six staff nurses (20%) held a bachelor degree. None of the participants had postgraduate qualification.

4.3.4 Years of working experience

The year of working experience was classified into categorical groups ranged from one to more than 15 years. The analysis of the finding revealed that the largest

4.4 Knowledge and Attitude Survey Regarding Pain Management

In this section, the results of the research survey questions were described to assess the knowledge and attitude of staff nurses toward pain management for SCD patient. The highest score in the research tool (KASRP) is 33. The authors of the tool recommended using a total score rather than splitting items into knowledge and attitudes (Ferrell and McCaffery, 2008), because many questions in the tool are combination between the knowledge and attitude for treating pain. Therefore, the frequency and percentage of both the correct and incorrect answers for each individual item of true or false, multiple choices and case studies questions are presented in Table 3, 4 and 5, respectively. Those question with no answers, were considered as an incorrect. One participant's left seven true or false questions without answers therefore it was considered as incorrect.

4.4.1 True or False Questions

A total of 18 true and false questions were described. The participants answered all the true and false questions except one participants left seven true or false questions without answer therefore it was considered as false. Among all the questions, only question 13 have a rate of 90% of the correct answers. Questions 6, and 18 have a rate of (83.3%), and question 17 have (86.7%) of the correct answers.

On the other hand, the participants answered five questions incorrectly with a percentage of more than 70%. In question number 1 about the vital signs as reliable indicators for the intensity of a client's pain, 90% (n = 27) of the staff nurses answered incorrectly, as they have the idea that the vital signs are always reliable indicators of the intensity of patient's pain. Moreover, in response to question three, 86.7% of the staff nurses thought that if patient in severe pain he would not sleep.

Similarly, in response to question 11 about encouraging client of SCD to tolerate as much pain as possible before asking for opioid medication, 86.7% (n = 26) of the participants' answer was incorrect. In response to question 15 about avoiding opioids during the pain evaluation period as this could mask the ability to correctly diagnose the cause of pain, 83.3% (n = 25) of the participants' answer was incorrect. While, in response to question 7 about promethazine (phenargan) is reliable potentiators of opioid analgesics, 76.7% (n = 23) of the participants answer was incorrect as they believe that promethazine can increase the effect of opioid analgesics.

In general, the results of the true or false questions revealed that half of the questions (questions 1, 2, 3, 7, 8, 9, 11, 14, 15) have a percentage of more than 50% of the incorrect answered (Table 3).

Table 3: Staff nurses responses to True and False questions (right answers are in bold and italic)

	F		T	
	n	%	n	%
1. Vital signs are always reliable indicators of the intensity of a patient's pain. (<i>F</i>)	27	90.0%	3	10.0%
2. Patients who can be distracted from pain usually do not have severe pain. (<i>F</i>)	19	63.3%	11	36.7%
3. Patients may sleep in spite of severe pain. (<i>T</i>)	26	86.7%	4	13.3%
4. Naproxin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful Sickle Cell Disease (SCD) Crisis. (<i>F</i>)	13	43.3%	17	56.7%
5. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. (<i>T</i>)	10	33.3%	20	66.7%
6. 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. (<i>T</i>)	5	16.7%	25	83.3%
7. Research shows that promethazine (Phenergan) is reliable potentiators (to increase effect) of opioid analgesics. (<i>F</i>)	23	76.7%	7	23.3%
8. Opioids should not be used in patients with a history of substance abuse. (<i>F</i>)	18	60.0%	12	40.0%

9. Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained). <i>(F)</i>	17	56.7%	13	43.3%
10. Elderly patients cannot tolerate opioids for pain relief. <i>(F)</i>	11	36.7%	19	63.3%
11. Patients should be encouraged to tolerate as much pain as possible before using an opioid. <i>(F)</i>	26	86.7%	4	13.3%
12. Patients' spiritual beliefs may lead them to think pain and suffering are necessary. <i>(T)</i>	14	46.7%	16	53.3%
13. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. <i>(T)</i>	3	10.0%	27	90.0%
14. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. <i>(F)</i>	20	66.7%	10	33.3%
15. 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. <i>(F)</i>	25	83.3%	5	16.7%
16. Anticonvulsant drugs such as lyrica (pregabalin) produce optimal pain relief after a single dose. <i>(F)</i>	10	33.3%	20	66.7%
17. Valium is not effective pain relievers unless the pain is due to muscle spasm. <i>(T)</i>	4	13.3%	26	86.7%
18. 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. <i>(T)</i>	5	16.7%	25	83.3%

4.4.2 Multiple Choice Questions

A total number of 11 multiple choice questions were described. The majority of participants selected the right answer with percentage more than 80% to the questions number 19 and 26 in the KASRP instrument. In response to question 19, about the recommended route for administration of opioid analgesics for patients with sudden onset severe SCD crisis pain, twenty-nine (96.7%) identified the right answer (intravenous route). In response to question 26 about the best approach to cultural consideration for patient in pain, 25 (83.3%) identified the correct answer. In addition, more than 50% of participants select the correct answers for the questions number 20,

22, 23 and 27 as the percentage is 66.7%, 60%, 70% and 76.7% respectively (Table 4).

On the other hand, 83.3% of the participants (n = 25) could not identify the right answer in response to question 29. Moreover, in response to question 21 and 25 about morphine dose and judgment about pain intensity 73.3% of the participants (n = 22) did not identify the right answers.

Table 4: Staff nurses responses to Multiple choice questions (right answers are in bold and italic)

	F		T	
	n	%	n	%
19. The recommended route for administration of opioid analgesics for patients with sudden onset severe SCD crisis pain:				
a. Intravenous				
b. Intramuscular	1	3.3%	29	96.7%
c. Subcutaneous				
d. Oral				
e. Rectal				
20. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for SCD patients?				
a. Sosegon	10	33.3%	20	66.7%
b. Morphine				
c. Meperidine (Pethidine)				
d. Tramadol (Tramal)				
21. 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	22	73.3%	8	26.7%
b. Morphine 10 mg IV				
c. Morphine 30 mg IV				
d. Morphine 60 mg IV				

22. Analgesics for sever SCD pain should initially be given:				
<i>a. Around the clock on a fixed schedule</i>				
b. Only when the patient asks for the medication	12	40.0%	18	60.0%
c. Only when the nurse determines that the patient has moderate or greater discomfort				
23. The most likely reason a patient with pain would request increased doses of pain medication is:				
<i>a. The patient is experiencing increased pain.</i>				
b. The patient is experiencing increased anxiety or depression.	12	40.0%	18	60.0%
c. The patient is requesting more staff attention.				
d. The patient's requests are related to addiction.				
24. Which of the following is useful for treatment of SCD pain?				
a. Ibuprofen (Motrin)				
b. MST (Dilaudid)	15	50.0%	15	50.0%
c. Lyrica (pregabalin)				
<i>d. All of the above</i>				
25. The most accurate judge of the intensity of the patient's pain is:				
a. the treating physician				
b. The patient's primary nurse	22	73.3%	8	26.7%
<i>c. The patient</i>				
d. The pharmacist				
e. The patient's spouse or family				
26. 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 Kingdom of Bahrain due to the diversity of the population.				
b. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic (philosophic), Italians are expressive, etc).	5	16.7%	25	83.3%
<i>c. Patients should be individually assessed to determine cultural influences.</i>				
d. Cultural influences can be determined by an individual's socioeconomic status (e.g., blue-collar workers report more pain than white-collar workers).				
27. The time to peak effect for morphine given IV is:				
<i>a. 15 min.</i>				
b. 45 min.	7	23.3%	23	76.7%
c. 1 hour				
d. 2 hours				

28. The time to peak effect for morphine given orally is:				
a. 5 min.				
b. 30 min.	18	60.0%	12	40.0%
c. 1 – 2 hours				
d. 3 hours				
29. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:				
a. <i>Sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued</i>				
b. Impaired control over drug use, compulsive use, and craving	25	83.3%	5	16.7%
c. The need for higher doses to achieve the same effect.				
d. a and b				

4.4.3 Case Studies

Both case studies mainly tested the staff nurses' attitudes toward patients on pain and identify any discrepancy between attitudes and practice in pain management for adult SCD patient. The answers of the two case studies revealed that the staff nurses beliefs about the SCD pain management are congruent with their actions (Table 5).

In both case studies (questions 30 A and 31 A), the majority of staff nurses (96.7% and 83.3%, respectively) reduced the patients self-report of his pain before charting on the pain scale.

When the staff nurses asked to check the action they will take after their assessment of the patients in both case studies (30 B and 31 B), the majority of staff nurses reduced the ordered dose of narcotic regardless of the patient was laughing or grimaces (73.3% and 63.3% respectively).

Table 5: Staff nurses responses to Case Studies (right answers are in bold and italic)

		F		T	
		n	%	n	%
30	On the patient's record you must mark his pain on the				
A.	scale below. Circle the number that represents your assessment of Ali's pain: <i>(Answer: 8)</i>	29	96.7%	1	3.3%
30	Check the action you will take at this time:				
B.	1. Administer no morphine at this time.				
	2. Administer morphine 2 mg IV now.	22	73.3%	8	26.7%
	3. Administer morphine 3 mg IV now.				
	<i>4. Administer morphine 5 mg IV now.</i>				
31	On the patient's record you must mark his pain on the				
A.	scale below. Circle the number that represents your assessment of Hasan's pain: <i>(Answer: 8)</i>	25	83.3%	5	16.7%
31	Check the action you will take at this time:				
B.	1. Administer no morphine at this time.				
	2. Administer morphine 2 mg IV now.	19	63.3%	11	36.7%
	3. Administer morphine 3 mg IV now.				
	<i>4. Administer morphine 5 mg IV now.</i>				

4.4.4 Respondents Overall Knowledge and Attitudes to Pain

The mean score results of the research questionnaire was 15.8 (47.8%). The highest score was 22 (66.6%) and lowest score was 6 (18.1%) out of 33 (100%). The majority of the participants (n = 9) have scored 16 (48.4 %) out of 33 (100%) and 5 participants scored 15 (45.4%) out of 33 (100%). Moreover, four participants have scored 17 (51.5%) and 3 participants scored 19 (57.5%) out of 33 (100%). Only one participants scored 20 (60.6%) out of 33 (100%) and another participant scored 18 (54.5%). Two participants scored 14 (42.4%) and another two participants scored 12 (36.3%) out of 33 (100%).

4.4.5 Relationship between Demographic Factors and Staff Nurses' Knowledge and Attitudes toward Pain Management

The mean score of the sample is 15.8. Mann-Whitney and Kruskal-Wallis tests are used to establish whether there is a relationship between the demographic data and the knowledge and attitude scores for the staff nurses.

The test revealed slightly statistically significant difference between nationality, age range, highest education, years of working experience or educational background and the score that the participants have achieved.

No significant correlation was found between scores of staff nurses who have enroll in programme about pain management with those who did not enroll in any kind of programme in pain management ($P = 0.877$) (Table 6).

The results indicated that a negative correlation exists between the staff nurses' demographic data and the knowledge and attitudes scores (Table 6).

Table 6: Score & Demographic data¹

		Score (out of 33)		Test	P-value
		Mean	SD		
Nationality	Bahraini	16.4	2.7	Mann-Whitney	0.693
	Non-Bahraini	15.4	3.2		
Age Range	21-30	16.2	1.1	Kruskal-Wallis	0.966
	31-40	15.6	3.6		
	>40	15.8	2.3		
Highest Education	Diploma	15.9	2.2	Mann-Whitney	0.732
	Bachelor	15.2	5.3		
Years of Working Experience	1-5 yr	16.0	0.0	Kruskal-Wallis	0.887
	6-10 yr	15.2	4.4		
	11-15 yr	16.4	2.5		

	>15 yr	15.5	2.4		
Have you attended any pain management course, training, workshop or conference?	Yes	16.5	4.9	Mann-Whitney	0.877
	No	15.7	2.7		

1. The mean score of the sample is **15.8 ± 3**

4.5 Summary

This chapter provided descriptive and statistical findings of staff nurses' level of knowledge and their attitudes toward pain management in adult SCD patients. In addition, a description of the sample of staff nurses that participated in this study is included. The overall results of this study revealed that the staff nurses' mean correct score was 47.8%, which indicated a knowledge deficit and negative attitudes regarding pain management in adult SCD patients. A discussion of the findings of this study will be presented in Chapter 5.

Chapter 5: Discussion

5.1 Introduction

The purpose of this study was to investigate the knowledge levels and attitudes regarding pain management among nursing staff working in sickle cell disease units in Kingdom of Bahrain. In the previous chapter, the findings of the nurses knowledge and attitude survey were described in detailed. This chapter includes a discussion and interpretation of the result of this study. The results were discussed in relation to previous studies.

It is difficult to accurately compare results of this study with the finding from previous studies because of the different surveys and strategies used to obtain data. Previous studies of staff nurses knowledge and attitude regarding pain management have focused on specific patients such as cancer and postoperative patients, and there were fewer studies in SCD patients addressing the same research topic.

5.2 Demographic Data

The demographic data in any research gave the researcher insight to link between the studied group and the topic of the research. Moreover, the researcher can justify the finding and find the effect of demographic data on the participants respond. The small size of the sample may affect the outcome of the statistical analysis; however, the small number of staff in the adult SCD wards limited it.

5.2.1 Age Range

The majority of the staff nurses represented in this study ($n = 17$, 56.7%) was between 31 and 40 years old. They scored a mean of 47.27%, while above 40 years old group ($n = 8$, 26.7%) scored a mean of 47.87%. However, the 21-30 age groups

scored slightly higher than the other groups with a mean score of 49.09%. The findings from this study showed no statistically significance differences between the participants' age and total knowledge and attitudes score. Despite that the number of participants in the age group 21-30 age is less than other group but they scored higher. One explanation could be that the participants in this age group are recently graduated from the nursing school comparing to older participants.

In some studies, such as Lui *et al.* (2008) and Lai *et al.* (2003) did not consider the age as a demographic factors because it is correlated with length of nursing experience. The clinical experience affects the knowledge and attitude more than age. Meanwhile, Wang and Tsai (2010) found that no significant correlation between age of the participants and their knowledge level in pain management while it was significant with participant clinical experience. This result is consistent with this study result and previous research studies (Brown *et al.*, 1999; Tse and Chan, 2004).

On the other hand, Pack-Mabien *et al.* (2001) found that with increasing age of the nurses the belief that drug addiction frequently develops in the management of sickle cell pain episodes decreased.

This result may be related to lack of self-encouragement and learning about SCD pain management with increase of the participant age and insufficient in-service education courses in pain management.

5.2.2 Nationality

The study sample consists of 30 staff nurses. The finding indicates that the majority of the participants were non-Bahraini (n = 19, 63.3%) and eleven (36.7%) were Bahraini. The mean survey score results of the research questionnaire were 16.4

for Bahraini and 15.4 for non-Bahraini. The results indicate that non-Bahraini participants scored slightly lower than the Bahraini participants did unlike Al Maran (2007) and Awadalla (2002) they found no significant differences between the two groups. Findings from literature revealed that the nationality of the participants was not examined and not considered as a contributing variable to knowledge and attitudes toward pain management. However, in this study the nationality of the participants had a slight impact on knowledge and attitudes toward pain among SCD patient. According to Bahrain Health statistics (2009) 50 % of nurses working in the kingdom of Bahrain are coming from different countries and most of them from India and Philippine.

Therefore, the slight difference in the mean score between the two groups could be attributed to their educational background and cultural differences about SCD pain management. Consequently, it is due to lack of understanding of the disease among the non-Bahraini.

5.2.3 Level of Education

The literature suggested that the higher the nurses' education preparation the better knowledge and attitude they have regarding pain management (Greenberger, Reches and Riba, 2006; Coulling, 2005; McCaffery and Robinson, 2002). In addition, Lai *et al.* (2003), Wang and Tsai (2010) studies, supported this conclusion. There results showed that nurses with bachelor or higher degrees had higher mean of correct answer scores. This was consistent with Plaisance and Logan, (2006) who found that bachelor degree students scored significantly higher (65%) than students in the associate degree (60.8%).

The mean score results of the research questionnaire was 15.9 (n = 24, 48.18%) for diploma holders and 15.2 (n = 6, 46%) for bachelor holders. The finding from this study showed that the participants with diploma in nursing achieved slightly higher score than those with bachelor degree. However, the study indicates no significance difference between the participants' level of education and the mean survey score.

This study's findings were consistent with the study result reported by Erkes *et al.* (2001). The study showed no significance correlation between type of nursing degree held by the participants and the knowledge and attitude survey scores.

This could be explained by the differences in the educational curriculum of the subjects. In Kingdom of Bahrain, there is no emphasized on pain and it is management in undergraduate nursing curriculum. Plaisance and Logan, (2006) suggested that nursing faculty needs to review nursing curriculum to ensure have in-depth pain management based on evidence-based research and standard of care. Moreover, nurses held master degree or specialized diploma in hematology is needed to verify whether this finding would be significant.

5.2.4 Years of working experience

Nurses often obtained knowledge through clinical experience. Xue *et al.* (2007) concluded that more the nurses exposure to patients with cancer were found to be knowledgeable more than those working in area with less exposure to cancer patients. Therefore, generally speaking, there is strong relationship between clinical experience and gaining knowledge. In contrast, Lai *et al.* (2003) nurses with longer clinical care experiences. Nurses who worked in intensive care units, however, had significantly lower mean correct scores. The present study findings are similar to Lai *et al.* (2003)

as no relationship between staff nurses years of working experience and their mean scores even though some of them work there for more than 10 years.

This result may be related to lack of self-learning and insufficient in-service pain management programme.

5.2.5 Attendance of pain management course, training, workshop or conference

Interestingly, 60% of the participants had more than 10 years of working experience, yet only 13.3% (n = 4) had received prior training and education about pain management, mainly from hospital in-service training (10%, n = 3) with only 3.3% (n = 1) from undergraduate nursing school during the bachelor degree. The reason for that could be limited continuous education programme regarding pain management offered for the staff nurses in the hospital or the staff nurses not attending that the time of the programme not convenience or they will not attend in at their own time without compensation. Other reasons could be limited internal motivation among the staff nurses to attend educational programs.

In this study, the mean survey score for the participants who attend a pain management education was 16.5 (50%) and 15.7 (47.57%) for those who did not attend. These findings indicate that hospital in-service training and nursing school education for pain management could be insufficient.

The study's findings were consistent with the results from other studies. Tsai *et al.* (2007) found that no differences in KASRP score in those who did and did not attend any type of training or continuous education programme related to pain management. In contrast, Tanabe and Buschmann (2000) and Lai *et al.* (2003) found that nurses, who attended a one-day seminar on pain management or received pain

education at professional conferences or had more prior hours of pain education achieved statistically significantly higher scores than other nurses.

One possible explanation for such findings that staff nurses in SCD wards might have found difficulty in acquiring knowledge regarding pain management due to the limited continuous nursing education programme provided for them. In 2009-2010, for example, no staff nurses in the study setting were nominated to such type of training or continuous education programme in pain management. In addition, the results have no effect on staff nurses knowledge and attitudes regarding the pain management may be due to insufficient sample of staff nurses who attend a pain-related continuing education programs. Therefore, further research is needed to evaluate the adequacy of the pain management programme. To support this recommendation, In Jordan, Abdalrahim, M. (2009) conducted a study to evaluate the effectiveness of implementing a postoperative pain management program in improving the Jordanian nurses' post operative pain assessment and management practices in the surgical wards. The findings showed that the implementation of an educational program for nurses was successful. Zhang *et al.* (2008) conducted study to develop, implement, and evaluate the impact of Pain Education Programme (PEP). They found that the PEP was effective in improving nurses' pain knowledge, attitudes, and assessment.

Currently, pain management workshops, which are organized and conducted by hospital in-service training department, is consisted of a formal lecture and a discussion that focuses on pain management in general and not specific for SCD patients, which may be insufficient for nurses working with such type of patients, which they suffer from frequent episode of acute and chronic pain. Moreover, the reading material given for staff nurses attending the workshop is not been updated.

5.3 Overall respondents' Knowledge and Attitude Survey Regarding Pain Management

The knowledge and attitude percentage scores could range from 0 to 100% though Ferrell and McCaffery (2008), the author of KASRP tool, did not set a predetermined acceptable passing score. Earlier research by McCaffery and Robinson (2002) determined 80% as a passing score. It was based on asking, "Is all of the information in these questions necessary for delivering safe and effective nursing care to children and adults with pain?" Moreover 80% or higher scores is identify as being acceptable in most practice standards (Brown *et al.*, 1999). Based on that and because reviewing the literatures assert that nurses play a significant role in pain management and it should not be compromised, therefore, in this study an 80% will be set as a passing score for the participants.

In this study, thirty staff nurses completed the survey. The mean score on nurses knowledge and attitude survey was 15.8 (SD = 3.0) or 47.8%. The data showed that staff nurses demonstrated poor knowledge and negative attitudes regarding adult SCD pain management. These scores were similar to those obtained by Lui *et al.* (2008) and Tsai *et al.* (2007). The mean score obtained by Lui *et al.* (2008) was 47.72%, while Tsai *et al.* (2007) had an overall score of 49.2%. Conversely, this score is higher than the score in Al Maran (2007) study on surgical nurses in Kingdom of Bahrain as the mean scores was 37.8%. Moreover, this results appear to be lower than those found in the majority of studies that have used the same survey; Wang and Tsai (2010) 53.4%, Xue *et al.* (2007) 55%, McMillan *et al.* (2000) 61%, Wilson (2007) 63.9%, Brown *et al.* (1999) 64.58%, Erkes *et al.* (2001) 72.9% in the pretest, Coulling (2005) 73%, Matthews and Malcolm (2007) 73.8%.

Thus, possible reasons for poor knowledge and attitude survey score could be limited proper lectures on pain with no critical information during undergraduate curriculum and working experience. In addition, the staff nurses may be unaware of having insufficient knowledge about pain management. A study by Brown *et al.*, (1999) showed that majority of the nurses in the study indicated that they felt very successful in their ability to care for patients in pain. Consequently, a further study is needed to investigate the barrier to effective pain management in adult SCD patients.

5.4 Analysis of Knowledge and Attitude Survey Regarding Pain Management

The results of this study indicate that the staff nurses have knowledge deficit and inappropriate attitude in the following areas regarding adult SCD pain management:

1) pain assessment; 2) perceptions about pain management; 3) pharmacological intervention in pain management.

5.4.1 Pain assessment

One of the most common reasons for unrelieved pain in hospitalized patients is failure of the health care providers to assess pain and pain relief (Morton and Fontaine, 2009). Due to subjective nature of the pain, staff nurses are responsible to have thorough and accurate assessment of patients on pain. In NKASRP, six questions are related to pain assessment; two true or false question and four multiple choice questions.

The authors' of KASRP tool used two case studies to evaluate the health care provider judgment about intensity of patients' pain for smiling and grimacing patients in relation to stable vital signs. Self-report of pain is the most reliable indicator of pain (McCaffery and Robinson, 2002) yet in this study only 26.7% (n = 8) believing that

the most accurate judge about the intensity of the pain is the patients himself. Whereas the majority of the staff nurses (n = 22, 73.3%) not believing in patients self-report of pain. This can be demonstrated more in their response to the case study questions (30 A and 31 A). In both case studies, the staff nurses did not believe the self-report of pain for smiling (96.7%) as well as grimacing (83.3%) patients who gave the same pain score. Thus, this can explain why twenty seven (90%) of the staff nurses in this sample agreed that vital sign is indicator for the intensity of the patients' pain. For that reason 73.3% (n = 22) of the staff nurses reduced the dose of the analgesia ordered by the physicians for the smiling patients and 63.3% (n = 19) did the same for grimacing patients. In other ward, this finding similar to Kaki *et al.* (2009), Lui *et al.* (2008) and Tse and Chan (2004) which support the idea that nurses still rely on vital sign and patients behaviour as indicator of the intensity of a patients' pain. On the other hand, this result is unlike that of Matthews and Malcolm (2007) study, while 91.2% of the nurses believe patients self-reporting of pain, they found that the nurses were more likely to believe the pain score of grimacing patients than the smiling.

The present study finding is inconsistent with other studies (Lui *et al.*, 2007; Matthews and Malcolm, 2007; Tse and Chan, 2004 and Lai *et al.*, 2003) result as there was no discrepancy between staff nurses attitudes and their practice toward pain management. The staff nurses practice according to their beliefs. In Lui *et al.* (2007) found that 71.3% of the nurses believed that patients is the most accurate judge of the intensity of the pain but they believed that patient is over-reported the amount of pain they had and they believed that the patient who grimaces more than the relaxed one. This discrepancy also supported by Matthews and Malcolm (2007), Tse and Chan (2004), and Lai *et al.* (2003).

One possible explanation is the misconception regarding patients on pain and not accepting the patients self report. The definition of pain by McCaffery (1977) "pain is whatever the experiencing person says it is, existing whenever he or she says it does." needs to be reinforce in both the clinical area and nursing curriculum. Holley *et al.* (2005) suggested expanding the nurse's role with specialized knowledge in pain assessment and management to improve patients' outcome.

Interestingly, this study found that 66.7% (n = 20) of the staff nurses agreed that placebo injection is useful tool to determine if patient on pain or not. Conversely, 86.1% of the nurses in McCaffery and Robinson (2002) study disagreed with using of placebos to assess patient pain. Placebos may be effective in management of pain in some conditions, but involving deception in administering it raises ethical issues, therefore some institutions have banned its use. In 2004, the American Society for Pain Management Nursing (ASPMN) declared their statement on use of placebos in pain management. It recommended that placebos not to be used in assessment as well as in management of patients pain. In addition, the American Osteopathic Association's (2007) supported ASPMN position statement as no medical justification for the use of placebos to assess or treat patients in pain. Both associations acknowledged that placebo could be used in clinical practice under the permission of Institutional Review Board (IRB) and with patients consent.

Generally, nurses needs to be educated about applying pain assessment tool to assess patients' pain such as Numeric Rating Scale (NRS). Wadensten *et al.* (2011) showed that patients still suffering from pain because of under-implementation of pain assessment tool to the extent it should be. In the hospital where this study done no pain assessment tool is been used by the staff nurses. The physicians are relay mainly on staff nurses' judgment and documentation about intensity of patients' pain despite it

is one of the competences that are required from the nurses (Departmental Policy and Processes (DPP), 2009). The DPP (2009) emphasized on patients self-report of pain intensity and using different pain scales to assess patients' pain thoroughly. Therefore, more research is needed to evaluate the nurses' knowledge about using pain assessment tools and barrier to apply it.

5.4.2 Nurses perceptions about pain management

Nurses may have knowledge base but it can be challenged by their perceptions (Wilson, 2007). For the purpose of this study, seven questions assessed nurses perceptions about pain management in adult SCD patients; six true or false (2, 3, 5, 10, 11 and 12) and one multiple choice question (23).

For true and false questions number two and three, the majority of the staff nurses were not supportive to the concept that patients can be distracted from pain and sleep in spite of severe pain. The mean score for incorrect answered to both questions was 63.3% (19 out of 30) and 86.7% (26 out of 30) respectively. These results were consistent with some of previous research studies (Wang and Tsai, 2010, Lui *et al.* 2008); and inconsistent with others. McCaffery and Robinson, (2002), Erkes *et al.* (2001) who found that majority of nurses agreed regarding the both statements above. This indicating nurses' misconception about pain and it is management. The staff nurses may views pain as suffering and discomfort experience therefore they expect patients to show behaviors act like he's in pain such as grimacing and crying.

Moreover, 86.7% (26 out of 30) of the staff nurses respond incorrectly to question number 11. This indicates that they believe that the patients should have to endure as much pain as possible before using opioid drugs, which consider incorrect answer. While, 53.3% (16 out of 30) agreed that the patients' spiritual beliefs may lead them to

think that pain and suffering are necessary. These findings may reflect an effect of the religious and culture background on the nurses' perception toward pain management. As it was mention earlier, the study sample consists of two nationalities so they represent different background. Goffman supports this idea when he views the hospitals as a small society (cited in Helman, 2001). The individuals within the hospital may differ from one person to another concerning their beliefs, values and religions practice. Therefore, the care the hospital provides may influences by the culture and social factors of the health care providers as well as the patients. More research is needed in order to investigate the effect of nurses' cultural background on pain management practice.

On the other hand, similar to Lui *et al.* (2008) the staff nurses (n = 19, 63.3%) did not agree with the statement that elderly patients could not tolerate opioid for pain relief. Concerning the reason that patients will request more pain medication, 60% (n = 18) of nurses believed that pain was increasing. On the other hand, 36.6% thought that asking to increase the dose of pain medication was simply due to drug addiction, while only one staff nurse (3.3%) thought that such requests just reflected patients' anxiety and depression. These results were higher than previously reported (Tsai *et al.* 2007, Lai *et al.* 2003) though it still shows indicated staff nurses lack of knowledge that may result in negative attitude in pain management. Generally, wrong belief leads to major obstacles to provide optimum pain management. One possible explanation for the wrong beliefs is the misconception related to the used of opioids and addiction. Unfortunately, the pain management of SCD requires opioid therapy which likely leads to drug dependence or addiction. Okpala and Tawil (2002, p458) support this by stating that "Pointers to dependence are a patient's insistence on determining the dose and timing of an addictive drug without caring as much about antibiotic or other

therapy, incessant objections to dose reduction considered medically appropriate, and frequent demands for dose increases especially after working hours".

Staff nurses are at times reluctant to give opioids out of fear that patients may become addicted, which would result in the undertreatment of pain. These beliefs and perceptions about SCD related pain and the prevalence of addiction must be addressed if clinical care is to be changed.

5.4.3 Nurses knowledge and attitude about pharmacological interventions

Majority of the questions on the KASRP were assigned to pharmacological interventions. These questions include nine true or false (4, 6, 7, 8, 9, 13, 16, 17 and 18) and 10 multiple choice questions (19, 20, 21, 22, 24, 27, 28, 29, 30B and 31B).

In terms of pharmacologic management, most staff nurses in the study were able to answer correctly the questions that are related to definition of opioid addiction, the action of valium, and the use of combined analgesics with a mean score of more than 80%. The fact that 83.3% of staff nurses were able to define addiction correctly, 86.7% have knowledge about action of valium, 83.3% agreed that with combining opioids with NSAID may results in better pain control. Moreover, these results reflect good knowledge and positive attitude among the staff nurses regarding pharmacological pain managements.

In this study, nursing knowledge related to promethazine (phenargan) was insufficient compared to previous studies. In response to question seven about promethazine is a potentiators of opioid analgesic majority of the participants 76.7% (n = 23) answer was incorrect. This indicates that the majority was not aware that promethazine is not reliable potentiators of opioid analgesia. This finding was

consistent with previous studies (McCaffery and Robinson, 2002; Erkes *et al.* 2001, Brown *et al.*, 1999). McCaffery and Robinson (2002) reported 35.1% of nurses, Erkes *et al.* (2001) reported that only 10%, and Brown *et al.* (1999) reported 17.5%, were aware that promethazine is not reliable potentiators of opioid analgesia. In fact, promethazine has a sedation side effect and this may confuse nurses with analgesia. According to Salmaniya Medical Complex (2008), guideline for management of haematology disorders promethazine should not to be used as an analgesia. The myth that promethazine is a potentiators analgesia should be corrected through educational programme and audit must be carry on in SCD unit to ensure that staff nurses follow the guideline.

In response to question 13, the majority of the staff nurses (n = 27, 90%) correctly identified that subsequent doses of opioid medication should be adjusted according to individual responses, however clinically this wasn't obvious in the case studies, which may indicate that this is also lacking in practice and gap between the knowledge and practice. Although, the majority of staff nurses rated both patients (Ali and Hasan) pain incorrectly, it was also noted with concern that 73.3% (n = 22) would have given Ali less than the maximum dose of morphine ordered by the physicians. Moreover, 63.3% (n = 19) would have do the same for Hasan. Inconsistencies were found in this study sample, which was similar to previous reports (Wang and Tsai, 2010, Tsai *et al.*, 2007, Lai *et al.*, 2003). Knowledge deficits in the pharmacological of morphine may have contributed to this action therefore further research is needed to highlights the reasons behind such inconsistencies.

When given the statement that morphine have a dose ceiling only 43.3% (n = 13) correctly indicated that this statement was false. This result similar to Erkes *et al.* (2001) 46.6% agreed to the statement. When correlating this response rate to the case

studies, more than 60% of the staff nurse chose a lower dose of morphine, rather than the maximum dose ordered by the physicians. It is hard to know why the nurses chose to reduce the dose of patients' medication. It could be due to refusal of patients self-rating of his pain, or because of the fear of addiction that influence their response. In Fielding and Irwin (2007) study, the nurses were withholding the patients' analgesia because of the fear of opioid side effects and addiction.

In conclusion, 19 questions out of 33 in KASRP were related to pharmacological interventions. Despite the correct mean score of the most questions is above 50% the staff nurse's still have lack of knowledge regarding pharmacology interventions and commonly used analgesic medication in adult SCD patients because only five questions (6, 13, 17, 18 and 19) have a passing score more than 80% . Therefore, inaccurate knowledge and negative attitudes about commonly used medications in SCD pain management among staff nurses need to be investigated thoroughly. Lin *et al.* (2008) found that continuing education in pain management could improve nurses' knowledge and attitude therefore periodic pharmacological educations should be emphasized in nursing curriculum and in-service educations.

5.5 Summary

The findings in this study which measured staff nurses knowledge and attitude regarding pain in adult SCD patients suggest that a knowledge deficit and negative attitude does exist.

According to Bahrain National Code of Professional Conduct for Nursing (2002), the nurse as an advocate for the client care, must be alert to, and take appropriate preventive as well as corrective measures regarding any instances of incompetent, unethical or illegal practice by any member of the health care team that places the

client's right and best interests in jeopardy. Furthermore, the nurse must provide adequate information for the clients. Honesty makes up trust, which is essential to build a therapeutic relationship between the nurses and patients.

More intensive and comprehensive pain management education is needed in basic nursing curriculum and in-service continuing education to reduce knowledge deficits and improve attitudes in adult SCD pain management.

Chapter 6: Conclusion and Recommendation

6.1 Introduction

This is the first study, in the kingdom of Bahrain, to assess the nursing staff level of knowledge and attitudes regarding pain management among SCD patient during disease crisis. The study started by exploring the significance of conducting this study, and the details of the literature about nurse knowledge and attitude regarding pain management among SCD patients. The methodological issues were discussed in detailed. Finally, the findings of data collection were presented and discussed in details. The main findings of the research shows that staff nurses have knowledge deficit and inappropriate attitudes toward SCD pain assessment and management.

This chapter discusses the study strengths, limitations, and disseminations of findings. The implications of the findings to nursing practice, education and nursing management were highlighted. Finally, the recommendations for future nursing researches and the researcher reflection on the study were presented.

6.2 Strengths and Limitations of the Study

6.2.1 Strengths of the Study

The area of staff nurses knowledge and attitude regarding pain management in adult SCD patients has not been researched in Kingdom of Bahrain, therefore this study is relevant to current nursing practice issues. Moreover, based on current study findings, applied research might be conducted in future.

Limited the study to staff nurses working in adult SCD wards is appropriate and strength the study as the organization where the study take place future plan is to establish a SCD center. Therefore, the study finding could provide good base to

expand the body of knowledge in order to establish an educational programme for the staff nurses who will work in the center.

In addition, one of the research strength is that the questionnaire was not translated to other language such as Arabic. Translation of questionnaire may affect the validity and reliability while misunderstanding of the questions might occur.

6.2.2 Limitations of the Study

Notwithstanding the positive aspect, this study has several limitations. The study recruited all nurses working in adult SCD units despite that the staff nurses in other units such as A/E, medical and surgical given care to SCD patients who are admitted there. Accordingly, while the convenience sample used in this study allows application of the research findings to SCD units, it does not allow these findings to be extended to other units in the hospital.

Moreover, the staff nurses in ward A and B were female, no male working there. Consequently, it is recommended to conduct the study in large sample with different gender to assess if there is any difference between female and male level of knowledge and attitude regarding SCD pain management.

The convenience sample is nonrandom sampling methods, which consider weakest sampling methods because it is more likely to produce biased sample in compare to random sampling (Hek and Moule, 2006). Therefore, the staff nurses who did not have the chance to participate in the study due to leaves or shift duty may have different responses to the study instrument than the staff nurses who participated in the study.

Another issue that limited the study findings is the high turnover of the staff nurses in ward B since 6 staff nurses were exchanged with other staff nurses who was working in different specialty rather than SCD units. Even though they have more than one year working experience and the time of the study they completed more than 3 months in ward B but still their backgrounds may affect their response to the questions. Consequently, this limits the generalization of the study findings.

In addition, it is important to note that the study sample was small therefore for the statistical analysis the researcher used nonparametric tests (Kruskal-Wallis and Mann-Whitney tests) which consider weaker than parametric tests but it is the research population and it cannot be increased.

While the questions in KASRP tool have been used before by many researchers, the closed ended questions (true or false and multiple choice) may consider one of study limitations. Such types of questions may limit the results in any research. The staff nurses in this study may have answered by guesswork rather than true knowledge. The participants were not given the opportunity to justify and explain their answers. Moreover, it was impossible to know if questions were truly understood by the staff nurses as anticipated.

One of the major limitations of this study is the tool that was used. The KASRP tool could not measure the relationship between the knowledge and attitudes toward pain management because most of items measure both variables at the same time.

Furthermore, this study attempted to evaluate staff nurses knowledge and beliefs about adult SCD pain management. Therefore there is no way to certain that the correct answers to the questions is true indications of staff nurses knowledge, beliefs

and attitudes as it may not reflect the way decisions are made and carried out in the clinical setting. In other words, the staff nurse's actual practice was not examined.

There were no questions in the study questionnaire to evaluate nurses' knowledge and attitude toward non-pharmacological interventions for pain management, which consider an important part of SCD pain management. Failure of this study to ascertain this from the question asked would be an area for further research.

6.3 Dissemination of Findings

The strategy of dissemination of the study's results will include presentation at local conference and publication of findings in appropriate clinical journal. First, the researcher will seek to disseminate the findings of the study to the staff nurses at all levels in the hospitals where the study was carried out. Then the study findings will be presented to managers and educationalist in in-service nursing continuing education department within the hospital.

A poster will be created to disseminate the main findings. This poster will be used to present findings at major or local conferences or workshops that are usually organized specifically for pain management's related issues. Moreover, it can be placed in clinical area in order to remind the staff nurses about the importance of updating their knowledge and improving their practice regarding management of SCD patient during pain crisis.

Lastly, the research will seek to publish the study findings in relevant nursing journals or the hospital newsletters and web page. Therefore, the benefit from the study findings will be disseminated in different levels (national and international). However, the researcher needs to consider the consequences of reaching the study

finding to SCD patients as the trust between the patients and the staff nurses might be effected when they get to know that the staff nurses in SCD units lack the knowledge regarding assessment and management of SCD.

6.4 Implications of Findings

The findings of this study have several implications for nursing in practice, education and management.

6.4.1 Implications for Nursing Practice

The findings of this study provide opportunities for staff nurses to evaluate themselves concerning SCD pain knowledge and management practices. Moreover, this study might increase the awareness of the health care professionals and the administration in the health organization toward the establishment of pain management team that work to make changes and advance the quality of SCD pain assessment and management. Nursing Managers and Nurse Supervisors can work and cooperate with the team, to facilitate and incorporate with the team to move more quickly in the desired changes.

Since the staff nurses lack of self-motivation toward learning about SCD pain management, during the shift hand-over the nurses can encourage to reflect on each other clinical practice. This time can provide the opportunity to remind and update nurses' knowledge, for example by discussing the action, side effect of particular pain management medication or reflect on patients' behaviour, and staff nurse respond to it. Additionally, the staff nurse who gets the highest score in pain management questionnaire can be used as a role model to motivate and educate the other staff nurses in clinical area.

6.4.2 Implications for Nursing Education

Study findings suggest that continuing education is crucial in order for staff nurses to be prepared to face any challenges in dealing with issues related to SCD pain management.

These research findings identify the staff nurses areas of strengths and weaknesses concerning adult SCD pain management. Knowing these will help me, in my role as Nurse Supervisor, in planning for educational strategies to address SCD pain management. This can be done in collaboration with educational institutes and in-service nursing continuing education.

Furthermore, continue of education for staff nurses is one of their competency requirements thus the results of this study can be useful for preparation of educational programme for in-service or nursing curriculum. Schools of Nursing and Midwifery in Kingdom of Bahrain can benefit from the findings of this study to evaluate the current program curriculum in regard to pain assessment and the best evidence pain management practice. Educational institutions have a responsibility to provide courses to develop excellent pain management nurses.

6.4.3 Implications for Nursing Management

Nurse Managers can play a major role in identifying the training and learning needs of their subordinates. They are responsible to develop a strategic plan to enhance their subordinate's growth development. The findings from this study open the door for nursing management to address pain management issues. Nursing management should ensure that staff nurses are accountable for proper assessment of pain and using effective pain management measures according to hospital standards,

policy and protocol. Therefore, the nurses in management level should guarantee the implementation of the DPP regarding pain assessment using appropriate pain assessment tools and applying accurate and effective pain management measures. The quality management department within the hospital can coordinate with nursing management board for effective applying of standards and protocols guidelines by conducting regular auditing for example.

Continuing education about SCD pain management should be provided in a regular basis to all staff nurses working in the units to enhance their knowledge and improve their attitudes. Moreover, new staff nurses within these units should enroll in an orientation programme to have extensive information about SCD pain protocol, assessment and management.

The nursing management board should increase the staff nurses awareness about the important of Pain assessment and management therefore, they should integrate it into nursing practice as the "fifth vital sign" along with other physiological parametric practice such as measuring blood pressure.

6.5 Recommendations for Future Research

The research done in a small sample size of staff nurses working in SCD wards therefore it is recommended conducting study on larger sample with different gender and involving nurses in A/E, Intensive Care Unit (ICU), medical and surgical unit. Because as it is said earlier that still SCD patients are admitted in these areas of the hospital.

The study was conducted in a governmental hospital therefore it is recommended conducting the study in different hospital (Private and government) and health

centers. We need a national study that investigates the knowledge and attitudes toward SCD pain management considering the high mortality rate.

Results of this study indicate that staff nurses do have knowledge deficits and poor attitudes towards SCD pain management. However, without further research it is impossible to conclude exactly what is the barrier that prevents staff nurses from increasing their knowledge and developing positive attitudes towards the adult SCD pain management.

Further research is needed by using new instrument and different data collection strategy (structure interviews) to explain and justify the reasons and perceptions of the staff nurses' on clinical practice regarding adult SCD pain management. Furthermore, the instrument should be able to determine the relationship between the staff nurse's knowledge and their attitudes toward pain management.

Pain Management is a multidisciplinary approach consequently future research is needed to include all those involved in assessing and managing pain as well as teaching about pain management.

6.6 Reflections on the Study

I am delighted to be in the final stages of the Masters in Nursing programme at RCSI-MUB. This experience has been thoroughly enlightening, increasing my intellectual ability with the latest and advances practice in nursing and particularly in SCD pain management. My journey to obtain the Master's degree has been a long and challenging one. It first began years ago after I completed my bachelor's degree in nursing. Being a master student is a challenging step I was not aware of it until I started the master programme. During these two years of the master programme, I

have gone through tough times but without my friends, colleague and family support I could not overcome it and handed my dissertation.

Through the second year of the Master's program, there have been some things that happened in my life that caused me to take a break and even think of withdraw from the programme. However, I am happy to be back on track and continued on the path. Shortly after this time, the recession began but with the help of my family, supervisor and friends, I focused only in my dissertation to receive the master degree in nursing.

Before doing the actual research, I only had a basic knowledge about the research and research process, besides that I was having a simple idea about what I was going to research and my research topic. I did not have a solid, conclusive argument. Moreover, the idea of submitting a 25,000 word was scary I was not used to it. Nevertheless, by working hard and spend day and night searching and writing in the dissertation chapters, it improved my research skills and accomplish the goal. In this research papers, I have learned to use large variety of resources in order to get information's about the research topic and build up an arguments from many different perspectives. Moreover, reading and researching more about the research topic helps me to make a better argument.

This opportunity to study and conduct a research changed my ways of knowing, as it prompted me to learn more about pain assessment and management. It has also allowed me to think in other ways and to learn from this experience in order to improve my own future practice. I believed that the nurses would benefit from additional education on SCD, pain assessment and management.

6.7 Conclusion

Pain is one of the main reasons why people seek health care, yet pain is often undertreated. Inadequate treatment has been linked to health care providers' failure to assess pain and to manage it appropriately. Moreover, staff nurses are the cornerstone for the management of adult SCD patients' pain, therefore, it is expected that they should have comprehensive knowledge and positive attitude regarding pain management. Nevertheless, nurses are accountable for their own practice and therefore have some responsibility to ensure they have the knowledge required to practice within the setting they have chosen to work in.

The finding of this study revealed that the staff nurses in adult SCD units have a significant knowledge deficit and negative attitudes concerning SCD pain assessment and managements. Reviewed literatures concluded that lack of knowledge among health care providers consider as crucial barrier to effective pain management.

Staff nurses working with SCD patients need to be educated in a regular basis to ensure updating the knowledge in SCD pain management. The continuous educational programme should be comprehensive to cover all pain aspects, (Pathophysiology, assessment, pharmacological and non-pharmacological managements). Moreover, such educational programmes should emphases on pain management misconceptions and health care providers' perceptions.

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Appendices

Appendix 1: Letter to seek permission to carry out the research from RCSI, MUB

ROYAL COLLEGE OF SURGEONS IN IRELAND
MEDICAL UNIVERSITY OF BAHRAIN

Letter to seek permission to carry out the research from RCSI, MUB

Research title: Knowledge and Attitudes of Nurses in Bahrain Regarding Pain
Management in Adult Patients with SCD

Dear Mr/Mrs _____

Director of Research Committee,

I am undertaking a Master Degree in Nursing in RCSI-MUB. In part of fulfillment of the course, I am required to undertake a research study.

I am intended to conduct a study about the Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD. A significant knowledge deficit has been identified between the nurses taking care of patients on pain as well as negative attitudes, which can lead to undertreatment of the patient's pain. The study will be conducted in a governmental teaching hospital. The sample criteria will be having at least one year working experience as staff nurse and working in the SCD ward of the hospital for at least three months continuously.

In order to access the research sample I am requesting a permission letter to access the identified hospital and get the hospital Ethical Committee approval. The participants will be voluntary to participate. Confidentiality and anonymity will be ensuring during the research process.

I would greatly appreciate your permission to conduct this study. If you have any questions regarding this study, I am available to meet with you. I enclose a copy of the proposal .For any queries, please do not hesitate to call me.

I am looking forward to hear from you,

Yours faithfully,

Appendix 2: Letter to seek permission to carry out the research from the Hospital

Dear Mr./Mrs _____

Hospital Ethical Research Committee,

I am undertaking a Master Degree in Nursing in RCSI-MUB. I am intended to conduct a study about the Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD. I am currently working as acting ward supervisor in the hospital. The study will be conducted in the adult SCD ward (A & B). My research sample will be the nurses in those wards. Therefore, in order to access the research sample I am requesting a permission letter to access the identified wards.

The participants will be voluntary to participate. Confidentiality and anonymity will be ensuring during the research process.

I would greatly appreciate your permission to conduct this study. If you have any questions regarding this study, I am available to meet with you at any time. I will provide the hospital with the study finding on completion of the study. For any queries, please do not hesitate to call me.

I am looking forward to hear from you,

Yours faithfully,

For more information, please contact:

Mrs. Shafeeqa Hasan Yousif

Mobile: 37777671

Ext: 7761

Appendix 3: Information Letter to seek permission to participate in the study

ROYAL COLLEGE OF SURGEONS IN IRELAND MEDICAL UNIVERSITY OF BAHRAIN

Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD

Participant information Sheet

Dear Mr/Mrs _____

Thank you for taking the time to read this information sheet. Here you will find some information on the purpose of this study, as well as the procedure involved.

I am undertaking a Master Degree in Nursing in RCSI-MUB. In part of fulfillment of the course, I am required to undertake a research study. I am intended to conduct a study about the Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD. The aim of the study is to investigate the knowledge levels and attitudes regarding pain management among nurses working in SCD Units in Bahrain and the factors that might influence their knowledge and attitudes.

The reason behind choosing the particular topic that we have a high number of SCD patients with recurrent admission to the hospital. Pain is the chief complain of those patients due to occlusive crises. The main challenging issue for the nurses in SCD Unit is to be aware of how to control and elevate patient's pain in effective and timely manner. Therefore, you will be asked to answer the questionnaire that will take about 20-30 minutes. All your answers are totally confidential.

Your participation is highly appreciated

For more information, please contact:

Mrs. Shafeeqa Hasan Yousif

Mobile: 37777671

Appendix 4: Consent form

ROYAL COLLEGE OF SURGEONS IN IRELAND MEDICAL UNIVERSITY OF BAHRAIN

Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD

Participant Consent Form

I _____,

Willing to participate in the above title study. I am given my consent as the researcher has fully informed me about the research aims and methods and agree for it to be used for future academic publication. I have not been forced in any way to participate in the study.

Signature: _____

Date: _____

Appendix 5: Letter to seek permission from nursing administration

Ministry of Health
Salmaniya Medical Complex
Nursing Services

Dear Mr. A.Jabar Isa

CNO

I am undertaking a Master Degree in Nursing in RCSI-MUB. I am intended to conduct a study about the Knowledge and Attitudes of Nurses in Bahrain Regarding Pain Management in Adult Patients with SCD. I am currently working as acting ward supervisor in the hospital (Ward A). The study will be conducted in the adult SCD ward (A & B). My research sample will be the nurses in those wards. Therefore, in order to access the research sample I am requesting a permission letter to access the identified wards.

The participants will be voluntary to participate. Confidentiality and anonymity will be ensuring during the research process.

I would greatly appreciate your permission to conduct this study. If you have any questions regarding this study, I am available to meet with you at any time. I will provide the hospital with the study finding on completion of the study. For any queries, please do not hesitate to call me.

I am looking forward to hear from you,

Yours faithfully,

For more information, please contact:

Mrs. Shafeeqa Hasan Yousif

Mobile: 37777671

Ext: 7761

Appendix 6: Nurses Knowledge and Attitude Survey Regarding Pain (Modified) tool

Section 1: Demographic Data

Nationality ☐ Bahraini ☐ Non-Bahraini

Age range

☐ 21-30

☐ 31-40

☐ 41-50

☐ 51-60

☐ >61

Highest Education

☐ Associated Degree

☐ Diploma in nursing

☐ Bachelor in nursing

☐ Master in nursing

Years of working experience

☐ < 1 year

☐ 1-5 years

☐ 6-10 years

☐ 11-15 years

☐ 16-20 years

☐ > 21 years

Have you attended any pain management course, training, workshop, or conference?

☐ Yes

☐ No

If Yes, specify

.....
.....

Section 2: True/False - Circle the correct answer

1	Vital signs are always reliable indicators of the intensity of a patient's pain.	T	F
2	Patients who can be distracted from pain usually do not have severe pain.	T	F
3	Patients may sleep in spite of severe pain.	T	F
4	Naproxin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful Sickle Cell Disease (SCD) Crisis.	T	F
5	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.	T	F
6	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
7	Research shows that promethazine (Phenergan) is reliable potentiators (to increase effect) of opioid analgesics.	T	F
8	Opioids should not be used in patients with a history of substance abuse.	T	F
9	Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained).	T	F
10	Elderly patients cannot tolerate opioids for pain relief.	T	F
11	Patients should be encouraged to tolerate as much pain as possible before using an opioid.	T	F
12	Patients' spiritual beliefs may lead them to think pain and suffering are necessary.	T	F
13	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.	T	F
14	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.	T	F
15	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
16	Anticonvulsant drugs such as lyrica (pregabalin) produce optimal pain relief after a single dose.	T	F
17	Valium is not effective pain relievers unless the pain is due to muscle spasm.	T	F
18	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.	T	F

Section 3: Multiple Choice – Place a check by the correct answer.

19. The recommended route for administration of opioid analgesics for patients with sudden onset severe SCD crisis pain

- ☐ a. intravenous
- ☐ b. intramuscular
- ☐ c. subcutaneous
- ☐ d. oral
- ☐ e. rectal

20. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for SCD patients?

- ☐ a. Sosegon
- ☐ b. morphine
- ☐ c. meperidine (Pethidine)
- ☐ d. tramadol (Tramal)

21. 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

22. Analgesics for sever SCD 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

23. The most likely 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.

24. Which of the following is useful for treatment of SCD pain?

- ☐ a. Ibuprofen (Motrin)
- ☐ b. MST (Dilaudid)
- ☐ c. Lyrica (pregabalin)
- ☐ d. All of the above

25. 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
26. 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 Kingdom of Bahrain due to the diversity of the population.
 - ☐ b. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic (philosophic), 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).
27. The time to peak effect for morphine given IV is
- ☐ a. 15 min.
 - ☐ b. 45 min.
 - ☐ c. 1 hour
 - ☐ d. 2 hours
28. The time to peak effect for morphine given orally is
- ☐ a. 5 min.
 - ☐ b. 30 min.
 - ☐ c. 1 – 2 hours
 - ☐ d. 3 hours
29. 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.

30. Patient A: Ali is 25 years old and this is his first day following SCD crisis. 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 Ali'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 5 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 side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 5mg q4h PRN pain relief." Check the action you will take at this time.

1. Administer no morphine at this time.
2. Administer morphine 2 mg IV now.
3. Administer morphine 3 mg IV now.
4. Administer morphine 5 mg IV now.

31. Patient B: Hasan is 25 years old and this is his first day following SCD crisis. 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 Hasan'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 5 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 side effects. He has

identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 5 mg q4h PRN pain relief." Check the action you will take at this time:

1. Administer no morphine at this time.
2. Administer morphine 2 mg IV now.
3. Administer morphine 3 mg IV now.
4. Administer morphine 5 mg IV now.

Thanks for given me from your time.

Appendix 7: Nurses Knowledge and Attitude Survey Regarding Pain tool

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 ($\alpha > .70$) 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

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.

Multiple Choice – Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is
- intravenous
 - intramuscular
 - subcutaneous
 - oral
 - rectal
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
 - intramuscular
 - subcutaneous
 - oral
 - rectal
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?
- 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 most likely 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.

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.
4. Administer morphine 3 mg IV now.

Answer Key

Knowledge and Attitudes Survey Regarding Pain

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.
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- F 9. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics.
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Answer Key

Knowledge and Attitudes Survey Regarding Pain

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- a. intravenous
 - b. intramuscular
 - c. subcutaneous
 - X d. oral
 - e. rectal
24. The recommended route of administration of opioid analgesics for patients with brief, severe pain of sudden onset, such as trauma or postoperative pain is
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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?

a. codeine

X b. morphine

c. meperidine

d. tramadol

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c. Morphine 30 mg IV

d. Morphine 60 mg IV

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X 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

X a. less than 1%

b. 1-10%

c. 11-20%

d. 21-40%

e. > 41%

29. The most likely reason a patient with pain would request increased doses of pain medication is

X 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)

X 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

X 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 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%

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- ☒ 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.

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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.

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 8: Betty R. Ferrell permission and opinion after tool modification

RE: "Knowledge and Attitudes Survey Regarding Pain"

12/6/2009

Betty Ferrell



Betty Ferrell
BFerrell@coh.org

To shafeeqa yousif

From: **Ferrell, Betty** (BFerrell@coh.org)

Sent: Sunday, December 06, 2009 9:54:25 AM

To: shafeeqa yousif (tahayo76@hotmail.com)

I reviewed all of your edits and I think they are fine. Good luck with your research using the tool -- Betty Ferrell

From: shafeeqa yousif [mailto:tahayo76@hotmail.com]

Sent: Fri 12/4/2009 12:40 PM

To: Ferrell, Betty

Subject: RE: "Knowledge and Attitudes Survey Regarding Pain"

Dear Betty,

Thanks for your replay. I have seen the tools in the web site and I will adapt "Knowledge and Attitudes Survey Regarding Pain"

please if you have time see the attachment and I'd like to hear your opinion regarding the modification to suit SCD patients

thanks again and waiting for your replay

Shafiq

Subject: Re: "Knowledge and Attitudes Survey Regarding Pain"

Date: Fri, 4 Dec 2009 12:10:49 -0800

From: BFerrell@coh.org

To: tahayo76@hotmail.com

You are welcome to use and adapt any of our tools. Are all on our website <http://prc.coh> in the section titled Research Instruments.

Betty Ferrell

From: shafeeqa yousif <tahayo76@hotmail.com>
To: Ferrell, Betty
Sent: Fri Dec 04 11:01:39 2009
Subject: "Knowledge and Attitudes Survey Regarding Pain"

Dear Mrs Betty,

I am a nurse from Bahrain working in SCD unit doing a master degree in nursing at RCSI-MUB. I am interesting to do my dissertation in "knowledge & attitude of nurses regarding pain managmnet in SCD unit" and I'd like to use The "Knowledge and Attitudes Survey Regarding Pain" tool.

If it is possible I'd like to modify the tool to suit SCD patients in Bahrain so I did some modification and I'd like you to have a look and give me your valuable opinion because I don't know if i done this modification it will effect the reliability and validity of the tool or not (I have attach the tool with the modification)

I am Looking forward for your replay

Shafiqqa