

**PERCEPTIONS OF SURGICAL NURSES REGARDING THE POST-OPERATIVE  
PAIN MANAGEMENT OF PATIENTS AFTER TOTAL HIP OR KNEE REPLACEMENT  
SURGERY**

by

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## DECLARATION

I declare that **PERCEPTIONS OF SURGICAL NURSES REGARDING THE POST-OPERATIVE PAIN MANAGEMENT OF PATIENTS AFTER TOTAL HIP OR KNEE REPLACEMENT SURGERY** is my work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



SIGNATURE

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## **ABSTRACT**

The purpose of this study was to explore and describe the surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who have undergone total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

Qualitative, exploratory-descriptive research design was applied. Purposive non-probability sampling was used and data collected by means of audio-recorded semi-structured individual interviews. Data saturation was reached after interviewing twenty surgical nurses. Themes and categories emerged from adopting Creswell's (2013) "data analysis spiral".

One of the key findings was that patients reportedly experience moderate to severe pain during the first three days after surgery, before it is controlled on mild to moderate levels or before the patient is pain free. Conclusions were drawn, and one of the major ones was that multimodal strategies are employed by the surgical to manage post-operative pain. Recommendations were also made from findings of this study, and one key recommendation was that expatriate nurses to have access to Arabic speakers to overcome language barriers.

## **KEY CONCEPTS:**

Pain management; perceptions; post-operative; total hip replacement; total knee replacement; surgical nurses

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“It always seems impossible until it’s done” (Nelson Mandela).

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## LIST OF ABBREVIATIONS

<b>APS:</b>	Acute Pain Service
<b>COX:</b>	Cyclo-oxygenase
<b>CSF:</b>	Cerebrospinal Fluid
<b>DPP:</b>	Departmental policy and procedure
<b>DVT:</b>	Deep venous thrombosis
<b>FLACC:</b>	Face, Legs, Activity, Crying, Consolability
<b>JCI:</b>	Joint Commission International
<b>IRB:</b>	International Review Board
<b>KAIMRC:</b>	King Abdullah International Medical Research Center
<b>KAMC-R:</b>	King Abdulaziz Medical City, Riyadh
<b>KSA:</b>	Kingdom of Saudi Arabia
<b>NSAIDs:</b>	Non-steroidal anti-inflammatory drugs
<b>PACU:</b>	Post Anaesthetic Care Unit
<b>PCA:</b>	Patient controlled analgesia
<b>PE:</b>	Pulmonary embolism
<b>TENS:</b>	Transcutaneous electrical stimulation
<b>THR:</b>	Total hip replacement
<b>TKR:</b>	Total knee replacement
<b>UNISA:</b>	University of South Africa

## CHAPTER 1

### ORIENTATION TO THE STUDY

#### 1.1 INTRODUCTION

Post-operative pain management in patients, after total hip or knee replacement surgery, remains a major clinical challenge for health professionals involved in their care, despite the availability of clinical practice guidelines for pain screening, assessment, and management using advanced pain modalities. Inadequate management or unrelieved pain can have serious consequences for the patient's well-being such as anxiety, impaired mobility, chest infection, deep vein thrombosis, pulmonary embolus, tachycardia, hypertension, increased vascular resistance and delirium (Brown, McCormack & McGarvey 2005:149). Post-operative pain that is inadequately managed contributes to patient dissatisfaction and prolonged hospital stays.

According to Smeltzer, Bare, Hinkle and Cheever (2010:240), Kowalak (2009:643) and Andrews and Boyle (2008:338) nurses' roles and responsibilities with regard to pain management are to: perform pain assessment; identify, share and validate the goals with the patient regarding pain management; provide patient and family education; elicit and evaluate cultural knowledge that can be used in pain management; perform physical care; help to relieve pain by administering pain relieving interventions; reassess the effectiveness and outcome of pain relief strategies; monitor for adverse effects and serve as advocates for the patient when the prescribed intervention is ineffective in relieving pain. Pain assessment and adequate intervention can positively influence outcomes such as time to discharge, participation in physical therapy, and patient satisfaction (D'Arcy 2011:38). The objective assessment and management of pain is therefore important for the total well-being of the patient.

The researcher observed that some nurses use subjective judgements when assessing post-operative patients' pain. The central aim of this study is to establish and come to a better understanding of the views of surgical nurses about pain and pain management of post-operative patients after total hip or total knee replacement surgery.

## **1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM**

### **1.2.1 The source of the research problem**

The motivation for this study originated from the researcher's clinical experience and observations as a Pain nurse for the last 4 ½ years at a Joint Commission International (JCI) accredited, King Abdulaziz Medical City hospital in Riyadh (KAMC-R), Kingdom of Saudi Arabia (KSA). Although there are guidelines for pain management available in the hospital the researcher observed during ward rounds that many post-operative patients who undergo total hip or knee replacement (THR/TKR) surgery verbalise their levels of pain as being moderate to severe despite the pain relief interventions they receive. Notwithstanding these patients' self-reports of their pain levels, some nurses pass subjective judgements when assessing and managing post-operative patients' pain and conclude that patients exaggerate their pain. This creates a barrier to a better understanding of post-operative pain management.

Pain is highly prioritised at this institution as is evident in the professional concern by its "acute pain management team" or "Acute Pain Service (APS)". There are general and specific pain management guidelines in place. The KAMC-R departmental policy and procedure (KAMC-R DPP 6020-054 2009:1-2) for patient controlled analgesia and (KAMC-R DPP 6020-052 2009:1-2) for epidural analgesia are guidelines in place to manage acute pain. These two guidelines are used to guide the "acute pain team" consisting of anaesthetists and acute pain nurses in the management of acute pain. The KAMC-R DPP 6020-076 (2011:1-2) are generic guidelines for pain management which are used

by physicians of other specialities who are not members of the “acute pain team.” Although the pain management guidelines provide clear directives for nurses on pain management, patients who undergo total hip or knee replacement surgery often complain of moderate to severe pain. This study will explore the perceptions of surgical nurses regarding the post-operative pain management of patients after total hip or knee replacement surgery.

## **1.2.2 Background to the research problem**

### *1.2.2.1 Pain*

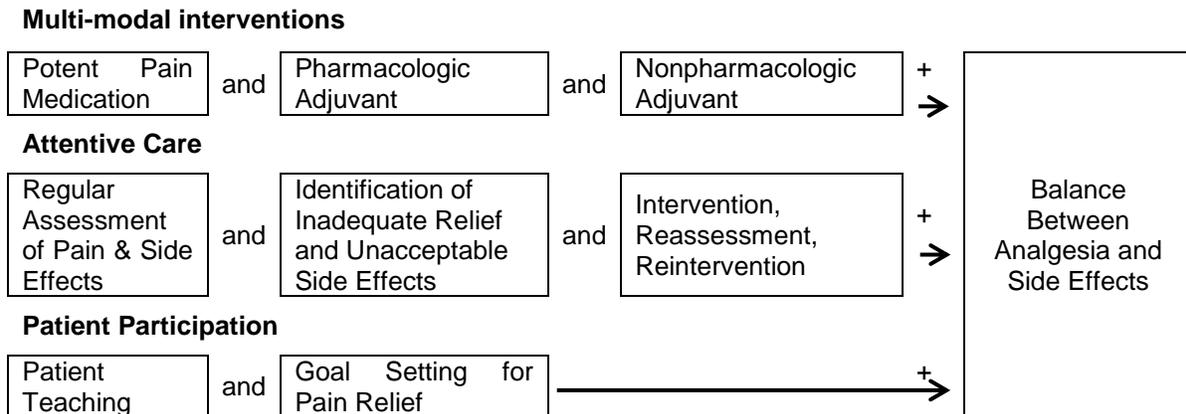
Pain in patients who have undergone hip or knee replacement is mostly related to surgical intervention leading to tissue damage. Smeltzer et al (2010:231) classify pain according to three types, namely, acute pain such as postoperative or trauma pain, chronic pain and cancer-related pain. Pain can also be classified by its inferred pathophysiology: nociceptive/physiologic pain and neuropathic pain. D’Arcy (2011:6) describes that acute pain has a short duration and has an identifiable cause, such as trauma, injury, or surgery. In view of these classifications, the current research will focus on acute post-operative pain that has a short duration and postoperative pain management, namely total hip or knee replacement surgery that resulted in tissue damage. The duration of acute pain is expected by the patient to be short and to resolve as the injury heals.

### *1.2.2.2 Theoretical Framework: Good’s (1998) Middle-Range Theory of Acute Pain Management*

There are multiple nursing theories on pain management. The middle-range theory of acute pain management proposed by Good (1998), cited in Peterson & Bredow (2009:68-69) is selected as theoretical framework guiding the present study. Good’s middle-range theory of acute pain management provides the structure of an acute pain management plan that can support an outcome of good pain control while minimizing negative side effects associated with potent pain medications.

Good (1998) cited in Peterson and Bredow (2009:68-69) and Blanchard and Murnaghan (2010:49), explain that middle-range theory is guided around three propositions comprising: (1) multimodal interventions, (2) attentive care and (3) patient participation as indicated in figure 1.1.

- *Proposition 1: Multi-modal interventions* consist of administration of a combination of strong analgesics and pharmacological adjuvants plus non-pharmacological adjuvants. The use of potent pain medication that refers to the major method used for pain relief such as opioids delivered by patient-controlled analgesia, subcutaneously, intramuscular, rectally, transdermally intravenously, or epidural analgesia using opioids, local anaesthetic drugs, or both (Peterson & Bredow 2009:68). The theory propose the use of pharmacological adjuvants such as non-steroidal anti-inflammatory drugs, plus non-pharmacological measures such as relaxation, music, guided imagery (Fitzpatrick & Wallace 2006:438). Opioid analgesics have side-effects such as nausea, vomiting, drowsiness, urinary retention, respiratory depression that need to be minimized to maintain balance between analgesia and side-effects (Fitzpatrick & Wallace 2006:438 and Good 1998:120).
- *Proposition 2: Attentive care* means vigilant care that focuses on regular assessment of pain and side-effects, plus identification of inadequate pain relief, interventions, reassessment, and re-intervention to achieve maximum pain control with minimal side effects (Fitzpatrick & Wallace 2006:438).
- *Proposition 3: Patient participation* propose patient education consisting of patient teaching for pain management and mutual goal setting between the nurse and the patient which is essential to achieve good outcomes for pain control.



Source: Adapted from Good (1998), cited in Peterson & Bredow (2009:68).

**Figure 1.1 A Middle-Range Theory of Acute Pain Management**

- *Rationale for application of middle-range theory of acute pain management*

Peterson and Bredow (2009:72), state that the middle-range theory of acute pain management has been adopted by postsurgical nursing units as the basis for their postoperative pain management program. The middle-range theory focuses on acute pain management proposing clearly the main components of acute pain management: namely multi-modal interventions, attentive care and patient participation. The theory provide a complete framework for assessment and treatment of acute pain needed for this study and these include nursing interventions, measures to accurately assess and treat pain in patients experiencing acute pain, minimizing negative side effects and maintaining balance between analgesia and side-effects and use of adjuvants and complementary therapies. There is real-world application of this theory in acute-postoperative care settings for patients who have undergone total hip or knee replacement surgery. The middle-range theory of acute pain management is significant for this study as surgical nurses are largely responsible for assessment and treatment of acute postoperative pain of patients who have undergone total hip or knee replacement. This will have

a direct impact on their perceptions regarding postoperative pain and pain management.

### *1.2.2.3 Pain management strategies in post-operative patients*

Post-operative pain assessment and management remains a challenge for health-care professionals. According to Maheshwari, Blum, Shekhar, Ranawat and Ranawat (2009:1421), the goals of the postoperative protocol include administration of a variety of agents with different mechanisms of action which exert local and systemic effects, use of agents with combined anti-inflammatory and analgesic properties, early conversion of parenteral to oral agents with prolonged effect, use of baseline analgesia to provide more uniform pain control, and minimization of parenteral narcotics and associated adverse effects. Pain management strategies to relieve pain in post-operative patients include multi-modal approaches such as pharmacological interventions, non-pharmacological interventions and advanced pain management pharmacological interventions/techniques. Multimodal analgesia is a multidisciplinary approach to acute pain management with a goal to maximize the analgesic effect and minimize the side effects of the medications (Maheshwari et al 2009:1419).

- *Potent pharmacological interventions* are primary in the management of acute postoperative pain. According to Smeltzer et al (2010:251), the route for administration of an analgesic agent depends on the condition of the individual patient and the desired effect of the medication. Opioid analgesics are fundamentally most potent and important pharmacological interventions prescribed for acute postoperative pain management. Opioid analgesic agents can be administered by parenteral, oral, rectal, transdermal patches, transmucosal, intra-spinal, or epidural routes. Opioids frequently used for acute pain management include morphine, codeine, tramadol, fentanyl, oxycodone, dihydrocodeine, buprenorphine, methadone and diamorphine

(McMain 2008:476). Although they are effective for pain management they have many side effects which include respiratory depression, addiction, sedation, delirium, nausea and vomiting, constipation and pruritus (D'Arcy 2011:132-135; Smeltzer et al 2010: 244-245).

- *Other pharmacological interventions* that are first-line analgesics for acute pain management include non-opioids such as paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) such as diclofenac and cyclo-oxygenase (COX) II inhibitors such as celecoxib, (Pasero & McCaffery 2011:183; McMain 2008:476). NSAIDs decrease pain by inhibiting cyclo-oxygenase (COX), the enzyme involved in the production of prostaglandin from traumatized or inflamed tissue (Smeltzer et al 2010:247).
- *Non-pharmacologic nursing activities* or alternative therapies can assist in pain relief, usually with low risk to the patient. Herr (2002), cited in McLennon (2007:10) states that non-pharmacological pain treatment falls into two categories: physical strategies based on underlying belief that physical energy can be added or removed from the patient to modulate pain both peripherally and centrally; and cognitive-behavioural strategies are thought to alter individual perceptions of pain, thus improving pain coping. The physical strategies include transcutaneous electrical stimulation (TENS), acupuncture, light to moderate strength training and aerobic exercises, massage, and thermal therapies. The cognitive-behavioural strategies include distraction, relaxation techniques, hypnosis, music therapy, and prayer. Non-pharmacologic pain management strategies can contribute to reduce the dose of an analgesic required to relieve pain and thereby minimize side effects of drug therapy (Lewis, Heitkemper, Dirksen, O'Brien & Bucher 2007:143).
- *Advanced postoperative pain management pharmacologic interventions/techniques* are recent developments in postoperative pain management. Vadivelu, Mitra and Narayan (2010:14-22 ) discuss in detail the recent advances in postoperative pain management that include neuraxial

administration of analgesic applying techniques such as epidural and spinal analgesia with combination of local anaesthetic drugs and opioids and new patient controlled analgesia in modes such as intravenous, intranasal, regional and transdermal. McMain (2008:476) adds that analgesic adjuvants used for acute pain management include the anti-convulsants gabapentin and pregabalin, anti-depressants such as amitriptyline and other adjuvants such as ketamine, antihistamines, corticosteroids, anti-spasmodic, bisphosphonate and calcitonin. Adjuvants are medications developed for other conditions but they also have pain-reducing properties (Black & Hawks 2005:470).

#### *1.2.2.4 The role of acute pain team*

The role of the acute pain team in King Abdulaziz Medical City hospital is to manage all patients experiencing acute pain such as post-operative pain, cancer related acute pain and noncancerous acute pain. The KAMC-R acute pain team operates for 24 hours and all other specialities refer their patients for further management of uncontrolled pain. The acute pain team consists of a group of physicians from the anaesthesia department and nurses trained specifically for pain management roles.

The King Abdulaziz Medical City hospital uses advanced practices and technologies for performing the total hip or knee replacement surgery which include minimal invasive techniques, computer-assisted procedures, advanced rehabilitation protocols, and improved perioperative pain management. The KAMC-R acute pain service (APS) yearly statistics of 2012 of patients admitted in four orthopaedic wards indicates that approximately 136 patients were managed for post-operative pain, of which eleven underwent total hip and 125 total knee replacement surgery which include both primary and revision surgery (summarized in Table 1.1). The patients receive physiotherapy for specific exercises for the hip or knee and pain relief strategies are implemented to tolerate the post-operative pain. According to Makhdom and Al-Sayyad (2010:905), total hip replacement (THR) is not a very common procedure to be

carried out in Saudi Arabia especially when compared with total knee replacement. This is indicated by the KAMC-R 2012 statistics of patients managed for post-operative pain.

**Table 1.1** King Abdulaziz Medical City 2012 Acute Pain Management Yearly Statistics

<b>Acute Pain Management Yearly Statistics for 2012</b>			
<b>MONTH</b>	<b>TKR</b>	<b>THR</b>	<b>TOTAL</b>
January	12	2	14
February	6	2	8
March	10	3	13
April	18	3	21
May	17	0	17
June	8	0	8
July	10	0	10
August	5	0	5
September	11	0	11
October	4	1	5
November	9	0	9
December	15	0	15
<b>TOTAL</b>	<b>125</b>	<b>11</b>	<b>136</b>

Source: King Abdulaziz Medical City 2012 Acute Pain Management Yearly Statistics

On average patients remain in hospital for 5 days after primary total hip replacement surgery and for recovery of hip replacement the number of days in hospital may exceed 5 days post-operatively, depending on the outcome of the surgery and the patient's condition. Patients, after primary or revised total knee replacement surgery, stay at least for 5 days in hospital unless there are other complications. A post-operative physiotherapy program is introduced without

delay and in conjunction with pain management strategies covered by the acute pain team.

The patients who are discharged from hospital are allowed to attend rehabilitation programs at the physiotherapy department as out-patients. Pain medications are prescribed to take-home in order to continue with the rehabilitation program and to prevent post-operative complications. Pain management strategies to relieve pain in post-operative patients include pharmacological and non-pharmacological interventions (Smeltzer et al 2010:256-257).

The post-operative patients who have undergone total hip or knee replacement surgery, routinely receive pharmacological interventions during the first 72 hours post-operatively which is started in the operating room and continues in the post anaesthetic care unit and orthopaedic wards. These include patient controlled analgesia (PCA), epidural analgesia, peripheral nerve blocks and intrathecal opioids and local anaesthetic drugs. The acute pain team follow-up the patients under their care for 72 hours or more depending on an individual patient's pain control. Patients who are discharged whilst under care of the acute pain team will be managed by the primary team physicians and surgical ward nurses for pain. The pain team ensures that the patient has covering analgesia during discharge from their services.

Post-operative pain management guidelines aim to eliminate or reduce pain and discomfort to a mild level in all patients experiencing pain. The guidelines cover pain screening, assessment, and reassessment, a plan of care, pain relief evaluation and outcomes. At the later stage oral opioids and non-opioids analgesia and non-steroidal anti-inflammatory drugs are gradually introduced when the patient tolerates mobilisation.

Total hip or knee replacement surgery has common complications such as infections, deep venous thrombosis, fat embolism and post-operative pain

(Walker 2012:19; Lewis et al 2007:1664). The management of post-operative pain in patients who have undergone total hip or knee replacement is a challenge which is exacerbated when surgical nurses use a subjective view of the pain and pain management resulting in inadequate pain management.

#### *1.2.2.5 Factors that contribute to the lack of or poor pain management*

There are several factors that impact on post-operative pain management. Castledine and Close (2009:780) and Abbruzzese (2004:882), state that these factors are related to the patient's expectations to have pain after surgery. Characteristics such as age, culture and previous experiences of pain, and lack of information about availability of pain relief measures feature prominently. Health care professionals' lack of awareness about patients experiencing pain, and organisational factors such as lack of pain management protocols and inadequate training of staff could also hamper pain relief. Pasero and McCaffery (2011:15-19) describe the underlying complexities of pain assessment that are the most common causes of unrelieved pain and unnecessary suffering such as failure to assess pain and underestimation of pain, failure to accept patients' reports of pain or to act on patients' reports on pain. Black and Hawks (2005:443), maintain that nurses rely on their own definitions of pain and cultural beliefs about pain. Rejeh, Ahmadi, Mohammadi, Kazemnejad and Anoosheh (2009:277-278) identified in their study the factors that impede effective postoperative pain management as lack of educational preparation, nurses' limited authority, limited nurse-patient relationship, and disturbances in pain management interventions.

#### *1.2.2.6 Effects of unrelieved acute pain*

Pain that is mismanaged and unrelieved could have profound effects on the quality of patient outcomes. McMMain (2008:472) state that failure to treat acute

pain can have adverse physical and psychological consequences for the patient. Smeltzer et al (2010:232) and McMMain (2008:472-47) state that unrelieved acute pain can affect the pulmonary, cardiovascular, gastrointestinal, endocrine, and immune systems, and patients may experience stress responses to postoperative pain that include increased metabolic rate, increased cardiac output, impaired insulin response, decreased mobility, compromised respiratory function, increased catecholamine release, and hyper coagulation, which may adversely affect patient recovery, thus lengthening hospital stay. Additional adverse effects of unrelieved acute pain include psychological distress and anxiety leading to sleeplessness and helplessness, and impaired postoperative rehabilitation that may potentially have long-term psychological consequences (Sinatra, De Leon-Cassasola, Ginsberg & Viscusi 2009:172). Persistent pain after surgery can cause a chronic pain condition to develop (McMain 2008:473).

#### *1.2.2.7 The surgical ward nurses*

According to Pasero and McCaffery (2011:16-17) and Castledine and Close (2009:780), it is evident that post-operative patients' pain is still inadequately managed and barriers to proper pain management exist from myths and misinformation of nurses, however most studies only addressed the patient's perceptions and experiences, nurses' knowledge and comparison of patients' pain experience and nurses' pain documentations.

Various studies have been conducted on different perspectives related to nurses' knowledge, perceptions, attitudes, opinions and beliefs about pain management. Rejeh et al (2009:274), focussed on registered nurses' experiences and perceptions of influencing barriers to post-operative pain management. The study identified lack of educational preparation, nurses' limited authority, limited nurse-patient relationship, and disturbances in pain management interventions that are considered barriers of pain management.

Plaisance and Logan (2009:167) explored nursing students' knowledge and attitudes regarding pain management in a sample of 313 students in nursing programs in Louisiana. The findings revealed misconceptions about analgesic administration and duration, along with an exaggerated fear about the incidence of addiction among patients. Knowledge of pharmacology items was lower than that of non-pharmacological items. Coulling (2005:43-44) found that nurses were more knowledgeable than doctors specifically in assessment and analgesic systems, whereas doctors were more knowledgeable in pharmacology while Wang and Tsai (2010:3188) found that nurses in intensive care units had poor knowledge of pain management. Knowledge of pain was significantly and negatively related to perceived barriers to pain management.

The studies conducted indicate that effective pain management relies on a solid base of knowledge about physiology, pharmacology, and the ability to match interventions with individual patient needs.

The researcher perceived that there is a discrepancy about patients' self-reported pain with nurses' utilization of their subjective judgements of the pain experienced by their patients when managing the patients' pain and believe that patients exaggerate their pain. This study intends to explore surgical nurses' perceptions regarding post-operative pain and pain management in patients who had undergone total hip or total knee replacement surgery in King Abdulaziz Medical City, Riyadh.

### **1.3 STATEMENT OF RESEARCH PROBLEM**

According to Polit and Beck (2012:82) a problem statement expresses the dilemma or a troubling situation that needs investigation and that provides a rationale for a new inquiry. Inadequate pain management causes adverse physiological and psychological outcomes such as increased post-operative morbidity, impeded recovery, poor patient satisfaction and a delayed return to activities of normal daily living which may lead to constant pain after surgery, which is often neglected.

Although pain is highly prioritised at King Abdulaziz Medical City in Riyadh as is evident with its pain management team and general and specific pain management policies, patients still experience post-operative pain and discomfort. During acute pain rounds it was observed that patients experienced unrelieved pain. Insufficient pain management in patients who have undergone total hip or knee replacement surgery could impede recovery and patient satisfaction and therefore should be addressed. So, the problem being investigated in the current study is to gain an understanding of surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

In order to uncover surgical nurses' perceptions about pain management for patients who had undergone total hip or knee replacement surgery, it is necessary to explore surgical nurses' perceptions regarding post-operative pain and pain management in surgical wards as it is not known what is the perceptions of surgical nurses about post-operative pain and pain management of patients who had undergone total hip or total knee replacement surgery.

#### **1.4 RESEARCH QUESTION**

Polit and Beck (2014:53-54) states that qualitative researchers often proceed with a fairly broad initial question that allows the focus to be sharpened and delineated more clearly once the study is underway. The research question is the central question which the researcher wants to answer by doing the research project. The research problem must be sufficiently focused and defined in order to formulate clear research questions (Boeije 2010:24).

The study seeks to answer the following research question:

- What do surgical nurses think regarding the post-operative pain management of patients after total hip or knee replacement surgery?

## **1.5 AIM OF THE STUDY**

### **1.5.1 Research purpose**

The purpose of the study is to gain an understanding of surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

### **1.5.2 Research objectives**

The objectives of the study were to:

- Explore and describe surgical nurses' perceptions about post-operative pain and pain management in patients who had total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.
- Identify strategies employed by surgical nurses in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia for post-operative pain management in patients who have had total hip or knee replacement surgery.

## **1.6 SIGNIFICANCE OF THE STUDY**

According to Mann, Constantinescu and Yoon (2011:6), the degree of post-operative pain is induced by surgery and is dependent on the underlying disease process, anatomical location, invasiveness of the procedure and concurrent disease management. Mann et al (2011:6) further mention that the importance of

adequate post-operative pain management decreases postoperative pain if pre-emptive analgesia are given.

This study is expected to provide insight into surgical nurses' perceptions of post-operative pain management in patients who had total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia. The findings will be used to formulate strategies to address subjective and inadequate assessment of patients' pain, to improve quality of pain management and overcome barriers leading to inadequate pain management in King Abdulaziz Medical City, Riyadh, KSA and to make recommendations to the nursing department.

### **1.7 DEFINITIONS OF TERMS**

For the purpose of this study, the following key concepts are defined:

#### **Pain**

The Joint Commission Resources (2003:1) defines pain as an unpleasant sensation caused by noxious stimulation of the sensory endings. It is a subjective feeling and an individual's response to the cause. Pasero and McCaffery (2011:21) further define pain as whatever the experiencing person says it is, existing whenever he/she says it does. The focus of this study is on acute post-operative pain.

#### **Patient**

A patient is a recipient of a healthcare service (Mosby 2013:1345), in this study patient refers to a person who has undergone a total hip or knee replacement surgical procedure.

#### **Perception**

Mosby (2013:1361), defines perception as the conscious recognition and interpretation of sensory stimuli through unconscious associations, especially

memory, that serve as a basis for understanding, learning, and knowing, or for the motivation of a particular action or reaction. The perception of surgical nurses about post-operative pain of patients who have undergone total hip or knee replacement surgery is the dimension of the human experience that will comprise the core element of this study.

### **Surgical nurses**

From preoperative assessment to assisting the surgical team to post-operative evaluation, the surgical nurse uses specific medical knowledge and technical skills to provide patient care (Ferguson 2007:104). In this study surgical nurse refers to a nurse working in an orthopaedic ward with minimum of one year experience in giving care to pre- and post-operative patients.

### **Post-operative**

Mosby (2013:1430) defines “post-operative” as the period of time after surgery. In this study it refers to the period after total hip or knee replacement surgery.

### **Total Hip Replacement (THR)**

Mosby (2013:1790) defines total hip replacement as a surgical procedure to correct the hip joint damaged by degenerative disease, often arthritis. The head of the femur and acetabulum are replaced with metal components.

### **Total Knee Replacement (TKR)**

Canobbio (2006:673) defines total knee replacement as the replacement of the knee joint with a prosthesis to relieve pain and provide stability and motion.

## **1.8 FOUNDATIONS OF THE STUDY**

### **1.8.1 The research paradigm**

A constructivist paradigm using qualitative research methodology is chosen for this study. Constructivist or naturalistic paradigm assumes that knowledge is maximised when the distance between the inquirer and the participants is minimized (Polit & Beck 2012:12). Qualitative research is premised on the belief that truth is both complex and dynamic and can be found only by studying persons as they interact with and within their sociohistorical settings (Burns & Grove 2009:23). Creswell (2013:24) add that with constructivist paradigm, the goal of research is to rely as much as possible on the participants' views of the situation.

The constructivist paradigm purports that reality is created as a result of a process of social construction (Maree 2007:59). The rationale for choosing this paradigm is to enable the researcher to understand the perceptions constructed by an individual surgical nurse from an active and engaging mind about the postoperative pain in reality as part of their practice in King Abdulaziz Medical City, Riyadh as explained by Rudestam & Newton (2007:35). Streubert and Carpenter (2011:35) maintain that a constructivist paradigm tends to focus on understanding experiences from the point of view of those who live them and this is linked to qualitative methods. The constructivist paradigm is appropriate for this study as the researcher intends to understand the "specific reality" of the perceptions of surgical nurses regarding post-operative pain management of patients after total hip or knee replacement surgery from their "local" subjective point of view as supported by Streubert & Carpenter (2011:4). The result will be based on understanding the perceptions of surgical nurses about post-operative pain management of patients after total hip or knee replacement surgery.

Qualitative research allows the researcher to explore the depth, richness and complexity inherent in phenomena (Burns & Grove 2009:51). The study will comply with the characteristics of a qualitative approach as the research will be done in the hospital setting which is the natural environment and real-life situations for the surgical nurses. The researcher is the main instrument to conduct the study by interviewing the surgical nurses and implementing a qualitative design.

### **1.8.2 Assumptions**

Polit and Beck (2008:14), cited in Brink, Van der Walt and Van Rensburg (2012:27), maintain that assumptions are basic principles that we accept on faith, take for granted, or assume to be true without proof or verification. Burns and Grove (2009:40), also indicate that assumptions are statements taken for granted or considered true, even though they have not been scientifically tested. Three levels/dimensions of philosophical assumptions, that are ontology, epistemology and methodology will influence the development and implementation of this study:-.

#### ***1.8.2.1 Ontological assumptions***

The researcher believes that the reality of this study consists of specific reality of surgical nurses' perceptions that are built up from social constructs of having relationships with post-operative patients and to be able to articulate their views about the patients' post-operative' pain and pain management. Botma, Greeff, Mulaudzi and Wright (2010:40), define ontology as a branch of philosophy dealing with the nature of reality. Terre Blanche, Durrheim and Painter (2006:6) add that ontology specifies the nature of reality that is to be studied, and what can be known about it.

### ***1.8.2.2 Epistemological assumption***

Epistemology specifies the nature of the relationship between the researcher (knower) and what can be known (Terre Blanche et al 2006:6). It is a branch of philosophy that deals with the nature of knowledge (Botma et al 2010:40).

The researcher assumes that interaction with individual surgical nurses will provide rich information to describe their perceptions regarding the post-operative patients' pain experience. The description of the relationship between the researcher and the participants is application of the constructivist paradigm.

### ***1.8.2.3 Methodological assumptions***

Methodological assumptions explain what the researcher believes what good science practice is (Botma et al 2010:188). This refers to the theoretical analysis of the methods and the researcher assumes that:

- The findings of the study will yield understanding of the perceptions of surgical nurses regarding post-operative pain after total hip or knee replacement surgery.
- The research methods used to collect and analyse data are appropriate methods to achieve the objectives of the study.
- The belief of the researcher as the research instrument adopting a constructivist paradigm linked to a qualitative approach will lead to thick descriptions of the data.

## **1.9 RESEARCH METHODOLOGY**

A qualitative research approach will be used to conduct the study. Qualitative research is a systematic, interactive, and subjective approach used to describe life experiences and give them meaning (Grove, Burns & Gray 2013:705).

### **1.9.1 Research design**

A research design is an outline, overall plan, that is used to answer a research question (Brink et al 2012:217; Johnson and Christensen 2012:593 & Polit and Beck 2012:271).

The study will adopt a qualitative, exploratory descriptive design. These concepts will be described in more detail in Chapter 2. The population, sampling, data collection and analysis will be addressed briefly in the present chapter.

### **1.9.2 Research methods**

Research methods are the techniques used to structure a study and to gather and analyze information in a systemic fashion (Polit & Beck 2014:390).

Under this subheading, the following will be discussed:

- Population, sampling and research setting.
- Data collection method, data analysis and measures to ensure trustworthiness.

#### ***1.9.2.1 Population***

Brink et al (2012:131) refer to the population as the entire group of persons or object that is of interest to the researcher, in other words, the population meets the variable that the researcher is interested in studying. The population for this study was surgical nurses who have been working in one of the four orthopaedic wards at King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

#### ***1.9.2.2 Sampling***

A sample is a subset of the population that is selected for a study (Grove et al 2013:708). Purposive non-probability sampling was used to select registered surgical nurses with at least one year experience in orthopaedic wards.

### 1.9.2.3 Research Setting

The setting of this study was the King Abdulaziz Medical City in Riyadh, capital of KSA (See map figure 1.2) that caters for all Ministry of National Guard employees and their families including civilians in need of medical care.

The study was conducted in four orthopaedic wards where surgical nurses who provide post-operative pain management of patients who have undergone total hip or knee replacement surgery were interviewed.



([http://en.wikipedia.org/wiki/File:Saudi\\_Arabia\\_map.png](http://en.wikipedia.org/wiki/File:Saudi_Arabia_map.png))

**Figure 1.2**

**Map of Kingdom of Saudi Arabia**

#### **1.9.2.4 Data collection method**

Qualitative research uses a systematic, interactive, subjective approach to describe life experiences and gives them meaning. Qualitative data collection method in this study includes the researcher as the instrument by interacting with participants. An instrument may be a part of equipment and in this study was a semi-structured interview guide by asking open-ended questions to allow the participants to express themselves freely as stated by De Vos, Strydom, Fouché & Delpont (2011:352), an audio-recorder and written field notes, using pencil to record observed non-verbal cues and reflections. The methodology will be discussed in detail in Chapter 2.

#### **1.9.2.5 Data analysis**

Corbin and Strauss (2008:1), cited in Grove et al (2013:279), refer to qualitative data analysis as a process of examining and interpreting data in order to elicit meaning, gain understanding, and develop empirical knowledge. The amount of data collected and analysed was determined by saturation of information during semi-structured interviews. The analysis of responses to the interviews was based upon Creswell's (2013) data analysis spiral, which includes four components of the iterative cycle, namely:

- Data organisation or management
- Reading and memoing
- Description, classification and interpretation of data
- Representing and visualising the data

The application of Creswell's (2013) method of data analysis spiral/circles for this study will be discussed in detail in Chapter Two.

### **1.9.2.6 Measures to ensure trustworthiness:**

Streubert and Carpenter (2011:455) explain that trustworthiness refers to “establishing validity and reliability of qualitative research”. Qualitative research is trustworthy when it accurately represents the experience of the study. The augmented model for developing trustworthiness proposed by Guba & Lincoln (1994), cited in Polit & Beck (2012:584-585) is adopted as quality criteria guiding the present study.

The researcher adopted this framework to confirm that the findings accurately reflect the participants’ perceptions and experiences, and that is more distinctively within constructivist paradigm as explained by Polit & Beck (2014:323). Trustworthiness is characterised by five defining elements, namely: credibility, dependability, confirmability, transferability and authenticity (See Chapter Two).

### **1.9.3 Ethical considerations**

Polit and Beck (2014:380) define ethics as a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal, and social obligations to the study participants. Permission to conduct the study was granted by Unisa Research Ethics Committee (See Annexure 1), King Abdullah International Medical Research Center (KAIMRC- See Annexure 2) and Institutional Review Board (See Annexure 4). The researcher considered ethical principles before, during and after conducting this study.

#### **1.9.3.1 Protecting the rights of the research participants**

The ethical issues anticipated for this qualitative study related to participants are: respect for human dignity and self-determination; informed consent; confidentiality and anonymity and protections from harm that emerge in the research methodology and design, and the research topic/field in general, and will be discussed in detail in Chapter 2.

Burns and Grove (2009:189-206) indicate that researchers and reviewers of research have ethical responsibility to recognise and protect the rights of human research subjects.

### ***1.9.3.2 Protecting the rights of the institution***

Permission to conduct the research was requested from the Research Committee of King Abdullah International Medical Research Center (KAIMRC) in Riyadh, KSA. The ethical issues related to the institution will be discussed in detail in Chapter 2. The aim is to comply with the rules and regulations of KSA, the institutional regulations of KAIMRC/National Guard Health Affairs and Good Clinical Practice to carry out a research study.

### ***1.9.3.3 The scientific integrity of the research***

The researcher will maintain honesty by avoiding: duplication of any other work, misconduct such as fabrication, falsification, dishonesty and plagiarism at all times. Burns & Grove (2009:213), state that the researcher is responsible for monitoring the integrity of his or her research protocols, results and publications.

## **1.10 STRUCTURE OF DISSERTATION**

The dissertation is structured as follows on Table 1.2:

<b>Table 1.2: Structure of the dissertation</b>		
<b>Chapter number</b>	<b>Chapter heading</b>	<b>Chapter outline content</b>
1	Orientation to the study	Outlines the problem, purpose and significance of the study, the research design and methodology, data collection and analysis, and defines key terms.
2	Research design and methodology	Describes the research design and methodology.
3	Presentations of findings and data analysis	Presents and discusses the findings of the study and the process of data analysis.
4	Discussion of findings and literature control	Verify the study findings in view of relevant literature and Middle-Range Theory of Acute Pain Management proposed by Good (1998).
5	Summary of findings, conclusions limitations, recommendations	Concludes the study, discusses its contributions, limitations of the study and makes recommendations for practice and further research.

## 1.11 CONCLUSION

This chapter outlined the background to the problem, the purpose, the objectives and significance of the study; research paradigm and assumptions; and briefly explained the research design and methodology and ethical considerations. The researcher chose a qualitative approach to describe the perceptions of surgical nurses regarding the post-operative pain management of patients after total hip or knee replacement surgery. Chapter 2 presents the research design and methodology.

## CHAPTER 2

### RESEARCH DESIGN AND METHODOLOGY

#### 2.1 INTRODUCTION

This chapter describes the research design and methodology adopted for this study in details, including the population, the sampling technique, data collection, data analysis, ethical aspects of the research and measures to ensure trustworthiness of the findings.

#### 2.2 RESEARCH DESIGN

A research design is the blueprint for conducting a study (Grove et al 2013:195). Bogdan and Taylor (1975) cited in Creswell (2013:5) state that research design refers to the entire process of research from conceptualising a problem to writing research questions, and on to data collection, analysis, interpretation, and report writing. Polit and Beck (2012:74) define a research design as the overall plan for addressing a research question, including specifications for enhancing the study's integrity.

The researcher chose a qualitative, exploratory descriptive design to gain an understanding of surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

##### 2.2.1 Qualitative research

According to Grove et al (2013:705), qualitative research is a systematic, interactive, subjective approach used to describe life experiences and give them

meaning. Polit and Beck (2012:739) describe qualitative research as the investigation of phenomena, typically in an in-depth and holistic fashion, through the collection of narrative materials using a flexible research design. Loisel, Profetto-McGrath, Polit and Beck (2011:420) add that qualitative research is the investigation of phenomena, typically in an in-depth and holistic fashion, through the collection of rich narrative materials using a flexible design.

Qualitative research is the appropriate methodology to meet the objectives of the study. The researcher interacted directly with the participants in the four orthopaedic units to make sense of the phenomena under study.

### **2.2.2 Qualitative, exploratory descriptive design**

According to Grove, Burns and Grove (2015:77) the philosophical orientation of exploratory descriptive qualitative studies are developed to provide information and insight into clinical or practice problem. Grove et al (2013:66) state that exploratory-descriptive qualitative researchers identify a specific lack of knowledge that can be addressed through seeking the viewpoints of the people most affected.

A qualitative, exploratory descriptive approach offers the opportunity to gather rich descriptions about the surgical nurses' perceptions. The researcher desired straight description of surgical nurses' responses about their perceptions regarding the post-operative pain management of patients after total hip or knee replacement surgery. Grove et al (2013:66) further state that an exploratory-descriptive qualitative researcher often indicates that a study is needed with a specific population to understand the needs of, desired outcomes of, or views on appropriate interventions held by member of the group.

Exploratory descriptive qualitative research studies are conducted to address an issue or problem in need of solution (Grove et al 2013:66). Tourula, Pölkki, and Isola (2013:172); Ekblad, Rönning, Fridlund and Malm (2012:132); Waite and Killian (2007:162) used an exploratory descriptive design with a qualitative

approach in their studies to explore and describe phenomena under their studies by capturing subjective information related to informants' views.

The rationale for applying a qualitative, exploratory descriptive approach to this study was to learn from the participants in their own descriptions and to use their perceptions to influence post-operative pain management of patients who had undergone total hip or knee replacement surgery. A qualitative, exploratory descriptive design was deemed to be the most appropriate approach for this study.

## **2.3 RESEARCH METHODOLOGY**

According to Given (2008:516) research methodology is used interchangeably with research method, referred to as the tools or techniques with which the researchers collect their data. Polit and Beck (2014:390) define research methods as the techniques used to structure a study and to gather and analyse information in a systematic fashion.

### **2.3.1 Research population and sample**

The research population is the entire group of persons or objects that is of interest to the researcher, in other words, that meets the criteria that the researcher is interested in studying (Brink et al 2012:131; Given 2008:644; Parahoo 2006:474). Sampling is the process of selecting a group of people, events, behaviours or other elements with which to conduct a study (Botma et al 2010:24; Burns & Grove 2009:343). A sample which consists of elements is selected from a target population by means of probability or non-probability methods. The target population is described as the entire population or individuals who meet the inclusion criteria. Botma et al (2010:124) and Parahoo

(2006:258) define a sample as a subset or portion of the accessible population identified for the study.

### **2.3.1.1 Population**

For the purpose of this research the population comprised surgical nurses, defined as registered nurses, working in four orthopaedic wards with minimum of one year experience in giving care to pre- and post-operative patients at King Abdulaziz Medical City Riyadh, Kingdom of Saudi Arabia

### **2.3.1.2 Sampling technique**

There are two fundamental sampling techniques, namely non-probability and probability sampling. Non-probability samples are selected by non-random methods. There is no way to estimate the probability that each element has of being included in a non-probability sample, and every element usually does not have a chance for inclusion (Polit & Beck 2012:275). Non-probability sampling methods include convenient, purposive, consecutive, quota and network or snowball sampling (Grove et al 2013:365; Polit & Beck 2012:276-279; Botma et al 2010:125).

Purposive non-probability sampling was used to select participants in this study. The participants were thoughtfully and purposefully selected because the researcher considered that they would be able to give in-depth knowledge for this study as maintained by Burns & Grove (2009:717). The rationale for choosing purposive non-probability sampling was that the registered surgical nurses who met the inclusion criteria would provide rich, straight descriptions of their perceptions to the point of saturation of data.

### **2.3.1.3 Inclusion criteria**

Denzin and Lincoln (2011:363) state that purposive sampling sets criteria for representation of key attributes when planning initial data for representation.

The criteria for inclusion were:-

- Registered surgical nurses working in orthopaedic wards in King Abdulaziz Medical City, Riyadh, KSA who had at least 1 year experience at this hospital.
- Prepared to use English language during the interview.

#### **2.3.1.4 Recruitment**

The participants were identified and recruited from four surgical wards through purposive sampling, and they participated on a voluntary basis, having given their written consent (See Annexure 8). The number of participants in the sample was not predetermined as in qualitative research the sampling decisions are guided by the data as maintained by Polit & Beck (2014:55). Data collection took place until no new data emerged from the data and data saturation was reached as maintained by Burns & Grove (2009:361) and Parahoo (2006:325).

A list of 41 surgical nurses from the four orthopaedic wards, who met the inclusion criteria was obtained from the nurse managers after permission was granted by the nursing authority (See Annexure 9). The number of participants was determined by data saturation. This means the information provided by participants in the data become repetitive as described by Polit & Beck (2014:55). Data saturation was reached after 20 surgical nurses were interviewed.

#### **2.3.2 Research setting**

According to Polit and Beck (2012:743), a research setting is the physical location and conditions in which data collection takes place. The study was conducted in 4 orthopaedic wards at King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

### **2.3.3 Data collection**

Polit and Beck (2012:725) define data collection as the gathering of information to address a research problem. A semi-structured interview guide with open-ended questions was used to obtain data relevant to the study. Each participant received the information about the study and these include: the description of the research project; the reasons on why participant was chosen; the use of audio-recorder in order to give permission in using it; the information would be kept confidential; use of pseudonyms to report the data; storage of data in safe place and that participating in this study was voluntarily and the right to withdraw from the study could be done at any time without any penalty.

#### **2.3.3.1 *Development of data collection instrument***

Creswell (2013:45), Parahoo (2006:326) and LoBiondo-Wood and Haber (2010:118) describe the qualitative researcher as the key instrument of data collection through examining documents, observing behaviour, and interviewing the participants.

The researcher used a semi-structured interview guide with open-ended questions to collect data. The engagement with daily work in pain management nursing service enabled further discussions with other health professionals that guided the researcher in developing the data collection instrument.

#### **2.3.3.2 *Pilot study***

A pilot study is a smaller version of a proposed study that is conducted to refine the methodology. It is developed much like the proposed study using similar subjects, but fewer numbers, the same setting, the same treatment, and the same data collection and analysis techniques; the researcher could use a pilot

study to develop various steps in the research process (Grove et al 2013:46; Maxwell 2013:101; Polit & Beck 2012:19).

Pilot semi-structured interviews were conducted with two respondents who would not form part of the main study. These interviews were conducted before commencing the main study to test the suitability of the interview schedule, techniques used in the interviews and data analysis process. The method was found suitable for the study.

### **2.3.3.3            *Characteristics of the data collection instrument***

A semi-structured interview guide is a tool for data collection that has broad areas of questions that allow the researcher the freedom to ask additional questions (Parahoo 2006:329). Botma et al (2010:209) describe interview guide or topic guide as a set of predetermined open-ended questions that guides, and does not dictate the interview. Grove et al (2013:271) reaffirm that the researcher remains open to how the participant responds and carefully words follow-up questions or prompts to allow the emic view, the participant's perspective, to emerge.

The semi-structured interview guide consisted of two sections (See Annexure 3). Section one included general introductory biographical data such as: gender, age, nationality, educational level, professional title, location and years of experience as surgical nurse, while section two included: central/grand tour question and specific open-ended questions arranged in logical sequence. Open-ended questions were used to solicit detailed perceptions of surgical nurses. From the responses, the researcher had an opportunity to modify the instrument. The researcher also probed the participants as supported by Botma et al (2010:209) and Parahoo (2006:329).

#### **2.3.3.4 Data collection process**

Data were collected over a period of four weeks from 24 June 2014 to 22 July 2014 from surgical nurses working in four orthopaedic wards at King Abdulaziz Medical City hospital in Riyadh, Kingdom of Saudi Arabia.

Polit and Beck (2012:742) refer to a semi-structured interview as an interview in which the researcher has a list of topics to cover rather than a specific series of questions to ask while Given (2008:810) define semi-structured interview as a qualitative strategy in which the researcher ask informants a series of predetermined but open-ended questions. Semi-structured interviews were done in a quiet, relaxed atmosphere to avoid distractions. The information was audio-taped, and written field notes for recording observed non-verbal behaviours and reflections were taken.

Before commencing the interviews, the researcher confirmed that the tape recorder was in good working condition by testing it first, while also keeping back-up batteries. The rationale for tape recording was to ensure accuracy of transcription and to allow the researcher to concentrate on the interview as recommended by Botma et al (2010:214). KAIMRC-International Review Board (IRB) and the participants gave permission to use an audio-recorder during the interviews. The room where interviews were conducted was quiet and a sign of "*please do not disturb meeting in progress*" was posted on the door to ensure uninterrupted interviews. The recorder was placed on a table between the interviewer and interviewee to record clearly and be able to see that the audio-recorder was still working properly and to maintain eye contact during conversations. Soon after the audio-recorded interview the researcher listened and checked for audibility and completeness to reconstruct the interview if any problem occurred with recording as supported by Polit & Beck (2012:543). Each interview was recorded in a separate file and labelled with the assigned pseudonyms presented by interview code for anonymity and confidentiality. As

soon as possible interview data was listened and transcribed verbatim for the purpose of data analysis.

Field notes were taken during the interviews. De Vos et al (2011:359) maintain that field notes are a written account of the things the researcher hears, sees experiences and thinks about in the course of interviewing.

Permission was obtained from all the participants to take field notes. A pencil and notebook were used to document field notes to describe the participants' expressions, changes in position, and other observations that would not be captured by audio-recorder as explained by Streubert & Carpenter (2011:43). Only the key utmost important information was concisely jotted down without distracting the participant. The field notes were included to form part of data analysis.

Interviews were conducted in English. The researcher asked open-ended questions using the semi-structured guide and probed for more detail or further clarification as the interview progressed. The questions in the semi-structured interview guide outlined a set of issues to be explored (see Annexure 3). During the interviews the researcher ensured bracketing preconceived ideas at all time to develop rigour and to reduce bias in research by maintaining data neutrality. "Epoche or bracketing" as supported by Manen (1990), cited in Creswell (2013:83) and Streubert and Carpenter (2011:27) is defined as a cognitive process of the researcher putting aside one's own beliefs, not making judgements about what one has observed or remaining open to data as they are revealed. During interviews the researcher validated the information given and the meaning of what they said. The researcher also asked for confirmation and clarity. In some cases the participants were allowed to give additional information to clarify previous statements.

### **2.3.4 Data analysis**

According to Grove et al (2013:691) data analysis is conducted to reduce, organise, and give meaning to data. Barnard and Ryan (2010:109) describe data analysis as the search for patterns in data for ideas that help explain why those patterns are there in the first place. The researcher must have an idea about the topic before commencing the study. The analysis of qualitative data is a hands-on process in which the researcher becomes deeply immersed in the data referred to as “dwelling” with data (Streubert & Carpenter 2011:45).

In this study the tape-recorded interviews were transcribed verbatim and analysed together with field notes adopting Creswell’s (2013) “data analysis spiral”. The levels of data management and analytic process followed a spiral movement which is circular moving back and forth from processes and up and down, with the purpose of getting a sense of the volumes of data and immersing in the details of data. The process of data analysis is presented in the form of four key steps followed in this study in a linear form, but the activities were moving in circles. The researcher maintained a conscious effort to “bracket” all prejudgments and previous experience on postoperative pain and pain management of a patient who have undergone total hip or knee replacement surgery. Creswell’s (2013) data analysis spiral guidelines were appropriate and applied for the purpose of this study as follows:

#### **2.3.4.1 *Data organisation or management***

Creswell (2013:182) states that the data are organised in some sort of filing system (folders/computer databases) and broken down into smaller units of information.

Each interview was recorded in a separate file and labelled with the assigned transcript code. Prior to transcription of each interview, the researcher listened to the audio-recording as an opportunity for analysis as recommended by Maxwell (2013:105). The researcher made notes transcribing key words, phrases and statements in order to identify categories and themes. The transcripts and field notes of each interview were organised and coded to electronic folders. Transcribed data were stored electronically as master files and the field notes were stored on the hardcopies in the notebook. For each transcript the summary sheet was also constructed for the main themes in the research. All interview files were dated accordingly.

#### **2.3.4.2      *Reading and memoing***

Creswell (2013:183) describes that in this loop the researcher continues analysis by getting a sense of the whole database. According to Streubert and Carpenter (2011:128) memoing is informal notes taken by the researcher to capture ideas about the data, emerging theoretical codes, and relationships among the codes (see Annexure 3.1 for example of verbatim transcript of one respondent). Johnson and Christensen (2012:518) state that memoing is a helpful tool for recording ideas generated during data analysis by writing memos. Given (2008:505) states that memoing is the act of recording reflective notes about what the researcher is learning from data.

The interview transcripts (See Annexure 3.3 for example of memo writing) were perused several times line by line to develop a sense of what it contains as whole until gaining a clear understanding regarding surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery.

Memos were written as reflective notes on Microsoft word in the left margins of interview transcripts to discover possible emerging categories.

#### **2.3.4.3      *Describing, classifying, and interpreting data into categories and themes***

In this qualitative, exploratory descriptive study, the transcribed data obtained from the interviews and field notes were coded and interpreted into themes, categories and subcategories as they emerged (See Annexure 3.2 table summary of themes, categories and subcategories). Categories were identified and then described and classified into broader themes. The constructivist paradigm was adopted by taking categories from participants' own words and concepts called "emic" categories, ones that represent the participants own meanings and understanding as explained by Fetterman (2008) cited in Maxwell (2013:108). Categories with similar meanings were grouped by highlighting with different colours to establish the meaning of the data. The categories were tapered down to a manageable number of categories and combining them into few main themes. The researcher made sense of the data by interpreting the issues identified and drew up tables of the data according to the themes, categories and subcategories and made interpretation of the data (see Annexure 3.2).

#### **2.3.4.4      *Representing and visualising data (writing report)***

Creswell (2013:187) states that this is the final phase of the spiral in order for the researcher to represent the data.

The findings of this study were integrated and presented in narrative passages that summarised the straight description of surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery.

## 2.4 MEASURE TO ENSURE TRUSTWORTHINESS

According to Creswell (2013:63) trustworthiness or validation is a section for being reflexive through personal biography, and both the ethical and political considerations of the author. Streubert and Carpenter (2011:455) describe trustworthiness as the process of establishing validity and reliability of qualitative research, and is trustworthy when it accurately represents the experience of study participants. Grove et al (2013:58) state to appraise rigor in qualitative study, that the researcher should be open and demonstrate methodological congruence, scrupulous adherence to a philosophical perspective, thoroughness in collecting data, consideration of all the data analysis processes, and self-understanding.

The researcher ensured trustworthiness through bracketing preconceived ideas about the phenomenon under investigation and returning to the research participants to validate the descriptive results with their experiences.

Guba and Lincoln's (1994) augmented model of five criteria of ensuring rigour of qualitative methodology in this study was applied as follows:

### 2.4.1 Credibility

According to Polit and Beck (2012:585), credibility refers to confidence in truth of the data and interpretations of them. Credibility is demonstrated when participants recognize the reported research findings as their own experiences (Streubert & Carpenter 2011:453).

In this study the researcher maintained a true reflection of the perceptions of the participants under study to achieve credibility by applying the following steps:

- *Prolonged engagement*: The researcher interviewed the participants until data saturation occurs as advised by Brink et al (2012:172).

- *Member check*: It is the act of returning to the informants to see whether the participants recognize the findings (Streubert & Carpenter 2011:48). In this study the researcher returned to the participants and asked them to confirm the accuracy of captured information and of whether the interpretation was a true or fair reflection of their viewpoints.
- *The study supervisor*: scrutinized the research methodology and assisted the researcher in establishing confidence in the truth of the findings.
- *Pilot study*: The semi-structured interview guide was subjected to a pilot-test with surgical nurses.
- *Interviews* were audio recorded to ensure accurate transcription of data.

#### **2.4.2 Dependability**

Dependability refers to the provision of evidence such that if it were to be repeated with the same or similar participants in the same or similar context, its findings would be similar (Brink et al 2012:172). Polit and Beck (2012:585) describe dependability as the stability (reliability) of data over time and conditions. Tobin and Begley (2004:392), cited in Liamputtong (2013:26) and De Vos et al (2011:420) state that researchers have the responsibility of ensuring that the process of research is logical, traceable and clearly documented.

In this study the researcher applied dependability criterion as follows:

- *Audit trail*: Is when a person who is external to the research process is asked to ascertain the status of the research in order to determine whether logical decisions are made throughout the research process (Baxter & Eyles 1997; Cutcliffe & McKenna 2007; Erwin et al 2007, cited in Liamputtong 2013:34). The researcher maintained consistency of the findings under the supervision of the study supervisor and kept all data related to the study for audit in a safe place (See Annexure 5).

### 2.4.3 Confirmability

According to Brink et al (2012:173) confirmability refers to the potential for congruency of data in terms of accuracy, relevance or meaning. Polit and Beck (2012:585) state that confirmability is the criterion concerned with establishing that the data represent the information that participants provided, and that the interpretations of those data are not invented by the researcher. The findings must reflect the participants' voice and the conditions of the inquiry, not the researcher's biases, motivations, interests or perspectives (Lincoln & Guba 1985:290, cited in Liamputtong 2013:27; Polit & Beck 2012:585).

The researcher in this study applied confirmability criterion as follows:

- The researcher kept all documents for the study in a safe place accessible to him only and these include: the approval letter granting permission to conduct the study and related conditions from the organisation, signed consent forms of the participants, the audio-recordings of the semi-structured interviews, field notes, interview transcripts, analysis of the data and findings.
- *Bracketing*: As defined in section 2.3.3.4, the researcher used bracketing to explicate his personal thoughts, ideas, suppositions, or presuppositions about the perceptions of surgical nurses regarding post-operative pain management of patients after total hip or knee replacement surgery. The aim of the researcher was to prevent from influencing the research process, bring to consciousness and reveal the surgical nurses' perceptions about the management of post-operative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery during data collection and analysis. The research participants were asked to validate the descriptive results with their experiences.

#### **2.4.4 Transferability**

According to Polit and Beck (2012:585) transferability refers to the potential for extrapolation, that is, the extent to which findings can be transferred to or have applicability in other settings or groups. In a qualitative study the researcher can only provide the thick description which entail the collection and provision of sufficient detailed descriptions of data within the given context, and the reportage of them but cannot specify the external validity of an inquiry (Brink et al 2012:173). Liamputtong (2013:26) state that the criteria of transferability are used in an effort to provide a foundation for the generalisability of qualitative research and emphasises the theoretical or analytical generalisability of research findings.

In this study the researcher applied strategies such as thick descriptions, purposive sampling and data saturation to enhance transferability as suggested by Brink et al (2012:173). The participants were purposively selected for the study as discussed under section 2.3.1.2. Semi-structured interviews were done until no new information emerged. The researcher provided sufficient detail in the report about research settings, participants, data collection strategies, analysis and the findings to enable the readers to determine the degree of similarity between the study site and the receiving context as part of thick descriptions.

#### **2.4.5 Authenticity**

According to Liamputtong (2013:25), Polit and Beck (2012:585) and Botma et al (2010:234) authenticity refers to the extent to which researchers fairly and faithfully show a range of realities and emerges in a report when it conveys the accurate and adequate viewpoints of participants.

The researcher enhanced authenticity of this research by including participants' direct quotes in the findings of the research report.

## **2.5 ETHICAL CONSIDERATIONS**

Burns & Grove (2009:213) state that the researcher is responsible for monitoring the integrity of his or her research protocols, results and publications.

The study complied with ethical principles of beneficence, respect for persons and justice, protecting the rights of participants and the institution as well as scientific integrity of the research.

### ***2.5.1 Protecting the rights of the research participants***

The researcher sought informed consent (See Annexure 8) from the participants as to interview them. The participants were provided with a participant information sheet (see Annexure 7) explaining the nature of research and giving details of participant involvement in the study. The participants had the opportunity to discuss any questions or concerns with the researcher before consent was obtained. Confidentiality of information obtained during the interview was assured (see Annexure 5). The identities of participants were protected by giving each a code number to ensure anonymity. Only the researcher has access to the data generated by the study.

#### ***2.5.1.1 Respect for human dignity and self-determination***

A written request was sent in the form of approved memorandum from nursing administration to the nurse managers of the four orthopaedic wards (See Annexure 9) to inform the surgical nurses about the prevailing study and the visit of the researcher to contact those willing to participate. The participants were informed about their right to withdraw from the research at any time without fear.

### *2.5.1.2 Informed consent*

Emmanuel et al (2000:2703) cited in Liamputtong (2013:39) and Polit and Beck (2012:61) describe informed consent as the provision of information to participants, about the purpose of the research, its procedures, potential risks, benefits, and alternatives, so that the individual understands this information and can make a voluntary decision whether to participate.

The researcher provided the study participants with adequate information about the nature of the study. The participants were given an opportunity to discuss any questions or concerns with the researcher before written consent was obtained. (See Annexure 8).

According to Schweigert (2012:30) even if the participant has signed the consent form as a volunteer, it is the participant's right to terminate his or her participation and the right must be respected. Researchers should inform participants about their rights to refuse or terminate participation in the study at any time (Grove et al 2013:178; Russell & Purcell 2009:23) and this was applied in the study.

### *2.5.1.3 Confidentiality and anonymity*

According to Liamputtong (2013:41) and Brink et al (2012:37) participants can expect that researchers protect the private information that they shared during the interviews and that it will remain anonymous and confidential. A promise of confidentiality is a pledge that any information participants provide will not be publicly reported in a manner that identifies them and will not be made accessible to others (Polit & Beck 2012:162).

In this study all information and data collected were portrayed in a confidential manner. No names of participants were added on the interview schedule. Only

the researcher has an access to the data generated by the study. All forms of data including, audio recordings, field notes and transcripts were locked safely and only the researcher has an access to the information.

#### *2.5.1.4 Protection from harm*

Polit and Beck (2012:152-153) and Streubert and Carpenter (2011:61), explain that for the principle of beneficence, the researcher has a duty to minimize harm and maximize benefits, and should protect the participants from exploitation. Participants' rights to protection from discomfort and harm be it physical, psychological, emotional, spiritual, economic, social or legal were respected.

#### **2.5.2 Protecting the rights of the institution**

Permission to conduct the research was first sought from the Higher Degrees Committee of the Department of Health Studies of University of South Africa and ethical clearance certificate was granted (see Annexure 1). The researcher also presented the research proposal to the King Abdullah International Medical Research Center (KAIMRC) and Institutional Review Board (IRB) in Riyadh, Kingdom of Saudi Arabia and received approval and a clearance certificate to conduct the study in orthopaedic wards (see Annexure 2 and 4). Burns and Grove (2009:207), state that in institutional review, a committee examine the study for ethical concerns and protect the rights of prospective subjects at their institutions.

The researcher also acknowledged the right of the institution to expect nurses to work a full day's hours for a full day's pay and staffing levels during shifts. Care was therefore taken not to infringe on the rights of the institution in this regard. All interviews were scheduled to suit participants, outside their working hours.

### ***2.5.3 Scientific integrity of the research***

According Yin (2011:41) “research integrity means that you and your word(s) can be trusted as representing truthful positions and statements”. Polit and Beck (2012:168-169) and Gallin and Ognibene (2012:44) emphasise that scientific integrity is adherence to standards of intellectual honesty in designing, conducting and reporting scientific research for handling allegations of research misconduct such as fabrication, falsification, or plagiarism in proposing, performing or reviewing research, or reporting research results. The researcher adhered to these principles throughout the study.

## **2.6 CONCLUSION**

This chapter described the research methodology used during this study. The research design, sampling technique, data collection method, pilot interview and study population included in the study were presented. The chapter concludes with the strategies applied to enhance the trustworthiness of the study as well as explanation of ethical considerations.

Chapter 3 presents the findings and data analysis.

## CHAPTER 3

### PRESENTATIONS OF FINDINGS AND DATA ANALYSIS

#### 3.1 INTRODUCTION

This chapter presents the findings of the study, the biographic profile of participants, and the procedure that was followed in data analysis.

#### 3.2 BIOGRAPHICAL PROFILE OF RESEARCH PARTICIPANTS

The list with names of forty-one (41) surgical nurses who met the inclusion criteria was obtained from the nurse managers after permission was granted by the nursing authority. These nurses were approached to participate in the study. Participation was voluntary. Semi-structured interviews were conducted with twenty (20) participants until data saturation occurred. Table 3.1 indicates the biographical information of the participants.

All twenty participants, one male and nineteen females, participated. Participants' ages ranged from 27 to 60. Nurses from nine nationalities participated in this study. Their education levels ranged from Diploma certificate to Master degree. The registered surgical nurses' scope of functions is according to their professional titles in the units. The Clinical resource nurse is responsible for clinical education of nurses in the unit. The Clinical nurse coordinator is the nurse in-charge coordinating patient care between all nurses giving direct care, nurse manager and other multidisciplinary teams, and staff nurse one and two are directly giving primary care to the patients in the unit.

The participants' years of experience working in orthopaedic ward in KAMC-R hospital ranged from one year to 28 years.

**Table 3.1 Biography profile of participants**

<b>Characteristics</b>	<b>Value</b>	<b>Frequency</b>	<b>Valid Percent</b>
<b>Gender</b>	Male	1	5
	Female	19	95
<b>Age</b>	27-30 years	6	30
	31-40 years	11	55
	41-50 years	2	10
	50-60 years	1	5
<b>Nationality</b>	Czech	1	5
	Filipino-British	1	5
	Filipino	7	35
	Irish	1	5
	Malaysian	4	20
	Saudi	3	15
	Singaporean	1	5
	Slovak	1	5
South African	1	5	
<b>Level of education</b>	Master degree	1	5
	Bachelor degree	15	75
	Diploma certificate	4	20
<b>Professional Title</b>	Clinical Resource Nurse	2	10
	Clinical care coordinator	2	10
	Staff nurse 1	12	60
	Staff nurse 2	4	20
<b>Years of experience working in orthopaedic ward</b>	1-5 years	13	65
	6-10 years	6	30
	11-20 years	0	0
	20-28 years	1	5
<b>Total number of participants</b>		20	100

### 3.3 DATA ANALYSIS

Data were collected in English, while capturing the responses by means of a digital voice recorder and written field notes, recording observed nonverbal behaviours and reflections.

Interviews were analysed using Creswell's (2013) 'Data Analysis Spiral' method which include:

- Data organisation or management (See Annexure 3.1 for interview transcript )
- Reading and memoing (See Annexure 3.3 for example of memo writing)
- Description, classification and interpretation of data (See Annexure 3.2 for themes and categories)
- Representing and visualising the data

A detailed description of this method appears in Chapter 2 (section 2.3.4.3 and 2.3.4.4). The highlighted and colour-coded words, phrases and sentences or paragraphs were directly taken and placed in quotation marks as used by the participants. In order to gain experience in coding and qualitative data analysis the researcher manually coded the data as recommended by Saldaña (2009:22). The researcher made sense of the data by interpreting the issues identified and drew up tables of the data according to “emic” categories and subcategories that emerged from initial data analysis. These were clustered together to form the main themes.

### **3.4 SUMMARY OF THEMES, CATEGORIES AND SUBCATEGORIES**

Four main themes emerged from the data analysis process. Each theme is discussed under the emerging “emic” categories and sub-categories with relevant narrations from the participants to describe the perceptions of the participants regarding post-operative pain management of patients after total hip or total knee replacement surgery. The researcher honoured the participants’ voices as priority for this study, therefore all categories and subcategories are placed in quotation marks as supported by Miles, Huberman & Saldaña (2014:74). The researcher maintained during data analysis as advised by Grove et al (2013:67) to report the data without transforming the data into more abstract concepts or constructs.

The following themes were identified by the researcher, generated from the interpretations of the clustered “emic” categories and subcategories

- Theme 1: Surgical nurses' descriptions of post-operative pain
- Theme 2: Assessment of pain in patients after THR and TKR surgery
- Theme 3: Management post-operative pain after THR and TKR surgery
- Theme4: Patient education and the involvement of loved ones in pain management

### 3.4.1 Theme 1: Surgical nurses' descriptions of post-operative pain

The theme, about participants' descriptions of their understanding of post-operative pain in patients who had total hip or knee replacement surgery emerged from four categories, namely: subjective experience, duration of pain, location of pain and severity of pain. Natan, Ataneli, Admenko and Noy (2013:252) state that a description of pain should include information as to the type of pain, its duration, location and specific features. Table 3.2 indicates theme one's categories and subcategories.

**Table 3.2 Theme 1: Surgical nurses' descriptions of post-operative pain**

Theme	Category	Subcategory
<b>Theme 1: Surgical nurses' descriptions of post-operative pain</b>	Subjective experience	• Patient's report of pain
		• Patient's expression of pain
	Duration of pain	• Immediately after surgery
		• Few days after surgery
	Location of pain	• Hip surgery site
		• Knee surgery site
	Severity of pain	• Free from pain to mild pain
		• Mild pain to moderate pain
		• Moderate to severe pain

### 3.4.1.1 *Subjective experience*

The category 'subjective experience' emerged from participants' consideration that post-operative pain is based on the patient's feeling or an experience verbalized. The following narrative from one of the participants illustrates this category below:

"Pain is subjective, you cannot tell me I don't have pain, even if I'm not grinning or crying, the patients are not reacting the same [way] to pain...."  
R17

The above description is supported by several authors. Pasero and McCaffery (2011:21) emphasised that the sensation of pain is completely subjective. Two subcategories related to category 'subjective experience' emerged, namely: *patient's report of pain* and *patient's expression of pain*.

#### 3.4.1.1.1 *Patient's report of pain*

In this subcategory '*patient's report of pain*' participants described that post-operative pain is the pain reported by the patients when asked if they are experiencing pain. The following excerpt illustrates one of the participants' descriptions of this subcategory:

"Yes ...pain is what the patient says it is." R11

McCaffery (1968:95) cited in Pasero and McCaffery (2011:21) supports this subcategory by giving a definition of pain used in clinical practice that 'pain is whatever the experiencing person says it is, existing whenever he says it does'. The authors maintain that the gold standard for assessing the existence and intensity of pain is a patient's self-report.

#### **3.4.1.1.2 Patient's expression of pain**

In this subcategory post-operative pain was described by participants as the effect after surgery leading to patients' expressions of their pain and demand for analgesia. Some participants described this as the feeling verbalized by the patients during time of pain screening and assessment of the patient's condition after surgery. It was described as follows:

"That's the feeling of the patient after operation..." R6

"Because some of the patients, not all, they will tell you pain, but the next minute they are happily with their family members laughing, laughing there..." R19

According to Aziato and Adejumo (2013:3) the individuality in pain experiences manifested in patients' pain expressions and demand for analgesics postoperatively.

#### **3.4.1.2 Duration of pain**

In the category 'duration of pain' participants described pain after THR and TKR surgery according to the period of time that it persists after surgery.

Two subcategories emerged namely *immediately after surgery* and *few days after surgery*.

3.4.1.2.1 *Immediately after surgery*

In this subcategory most of the participants described their understanding that post-operative pain occurs immediately after surgery. This is illustrated by the following quote:

“What I understand, I think this pain is very severe though most severe pain post-operatively...and then usually immediately post-surgery...” R8

Joelsson, Olsson and Jakobsson (2010:2834) support the descriptions that the most common postoperative pain experience was ‘immediately after surgery’ and that it was felt very intense.

3.4.1.2.2 *Few days after surgery*

Post-operative pain was also described as pain experienced a few days after total hip or knee replacement surgery. This is evident from the following statements:

“...it’s acute pain within first couple of days...” R9

“...post-operatively especially the first two or three days...” R6

Joelsson et al (2010:2835) explain that most of the patients described post-operative pain experiences as pain that lasts for days following hip replacement surgery. Mosby (2013:34) defines ‘acute pain’ as severe pain, as may follow surgery or trauma. Establishing the onset of pain and how long the pain has lasted is an element of pain assessment (D’Arcy 2011:43; Lewis et al 2007:132; Lyer, Levin and Shea 2006:617).

### **3.4.1.3      *Location of pain***

In the category 'location of pain' the subcategories *hip surgery site* and *knee surgery site* emerged. The following quotations are linked to this category:

“... pain felt by the patient, post-operatively with regards to the operative site...” R2

“Mm pain that they are experiencing is mostly surgical. So it comes from the operative side...” R20

Ward (2014:107) describes postoperative pain as surgical pain that is a type of nociceptive pain that occurs from tissue trauma and the stimulus is perceived by the body as painful.

#### **3.4.1.3.1      *Hip surgery site***

For the patients who have undergone hip replacement surgery the pain experienced was described as located from hip incision site. The following excerpt supports this subcategory:

“... at the leg side and for the hip,..if for sure the hip side...” R5

Pasero and McCaffery (2011:50) and Smeltzer et al (2010:238) state that location of pain is indicated by the patient pointing to the area on his or her body that is painful.

### 3.4.1.3.2 *Knee surgery site*

Participants described post-operative pain in patients who have undergone total knee replacement surgery as pain experienced from the location of the affected knee incision site. As one of the participants' describes:

"...for the total knee replacement most of them at the knee part..." R5

According to Pasero and McCaffery (2011:50) and Smeltzer et al (2010:238) patients experiencing pain may point to the area on his or her body that is painful. After total knee replacement surgery the knee site will be pointed by the patients as illustrated by the descriptions made by participants.

### 3.4.1.4 *Severity of pain*

In the category "severity of pain" three subcategories emerged. Pain was described in terms of its severity. To identify the levels of pain experienced by the patients after total hip or knee replacement surgery participants rate pain on a scale of zero to ten with zero reflecting no pain, one to three as mild pain, from four to six as moderate pain and seven to ten as severe pain.

Pain levels were described as follows:

"Zero is no pain ...one to three is mild pain..." R16

"...from four to six it will be moderate pain and from seven to ten it will be severe pain." R7

Pain rating scales recommended by D'Arcy (2011: 57) correlate with the participants' descriptions.

3.4.1.4.1 *Free from pain to mild pain*

Participants explained that patients who receive adequate common pain control regimens such as epidural analgesia, patient controlled analgesia, opioids and other analgesia *will be pain-free or only experience* mild pain. The quotation below illustrates this subcategory:

“... but I think the next day when the patient will be more comfortable with the medication, especially when we are controlling the amount of medication going through the patient’s body.....it will decrease from zero to three or less than four.” R6

3.4.1.4.2 *Mild pain to moderate pain*

Participants felt that patients will suffer mild to moderate pain if adequate common pain control regimens are applied as described in this study. The quotations below illustrate this subcategory:

“...most of the time[s] they are always like three to four...” R20

“Uh post-operatively of course they are fresh from PACU so they still receives load of anaesthesia, ‘sah?’ So maybe couple of hours and this anaesthesia subsided so they will complain, despite of this Epidural and PCA thing. So, they will just give us two or four pain score.” R2

In a study to evaluate the effectiveness of relaxation therapy for patients receiving joint replacement surgery, Lin (2011:605) found that the range of

severity in the scores for the worst pain after surgery was 4 to 6 and the scores of average pain severity was 2 to 4.

#### 3.4.1.4.3 *Moderate to severe pain*

The subcategory '*moderate to severe pain*' relates to participants' views about the first three days after surgery when the severity of pain in these patients range from moderate to severe pain. Some of the participants described moderate to severe pain as follows:

"I do definitely see patients with severe pain..." R12

"Operation day itself especially when we receive patient[s] from surgery and then first day it can also goes to moderate to severe, but on the second day you can see the trend going down,[it] can go to moderate..." R13

McCartney and Nelligan (2014:83) state that total knee arthroplasty (TKA) is a painful and common orthopedic procedure amongst elderly patients that frequently results in moderate to severe pain in the immediate postoperative period.

### **3.4.2 Theme 2: Assessment of pain in patients after THR and TKR surgery**

The second theme deals with the methods used by the participants to identify if patients who had total hip or knee replacement surgery experience the pain. This theme emerged from three categories, namely: the subjective assessment of pain, observations of behavioural pain responses and physiological responses to pain. Table 3.3 indicates theme two's categories and subcategories.

**Table 3.3 Theme 2: Assessment of pain in patients after THR and TKR surgery**

Theme	Category	Subcategory
<b>Theme 2: Assessment of pain in patients after THR and TKR surgery</b>	Subjective assessment of pain	<ul style="list-style-type: none"> <li>• Patient's self-report of pain</li> </ul>
	Observations of behavioural responses to pain	<ul style="list-style-type: none"> <li>• Facial expressions</li> </ul>
		<ul style="list-style-type: none"> <li>• Vocalizations</li> </ul>
		<ul style="list-style-type: none"> <li>• Actions that could imply pain</li> </ul>
		<ul style="list-style-type: none"> <li>• Use of FLACC scale for non-verbal patients</li> </ul>
	Observations of physiological responses to pain	<ul style="list-style-type: none"> <li>• Elevated blood pressure</li> </ul>
		<ul style="list-style-type: none"> <li>• Increased heart rate</li> </ul>
		<ul style="list-style-type: none"> <li>• Increased respiratory rate</li> </ul>

### **3.4.2.1 Subjective assessment of pain**

The category 'subjective assessment of pain' emerged from participants' descriptions that they initially screen for pain by asking the patients if they are experiencing pain and if pain is verbalised then they continue to assess it. The following subcategory emerged:

#### *3.4.2.1.1 Patient's self-report of pain*

Participants' explained that during assessment of pain it is important for the patients who can verbalise their pain to ask them about the following: '*the location of pain, the duration of pain, the intensity of pain using pain rating scales out of zero to ten (0-10) and asking the aggravating factors to pain*' as discussed in theme 1 section 3.4.1.1. Although some of the participants indicated that they believe the patients when they report their pain there were other participants who

confirmed that they do not always believe patients' reports about their pain. The following quotations illustrate this subcategory:

"Yes, pain is what the patient says it is...if they can talk then they usually say ...I am in pain, so that's the time you ask the patient about the severity, location and the degree of pain." R11

"...we have to ask them if they are in pain..." R4

Arnstein (2010:61) states that people with mild or moderate pain will not talk about their pain unless asked about it, screening for the presence of pain must be done before pain escalates to intolerable levels.

Weber and Kelly (2014:149) state that pain is a subjective phenomenon and thus the main assessment lies in the client's reporting.

#### **3.4.2.2 Observations of behavioural responses to pain**

The category 'observations of behavioural responses to pain' emerged from participants' views that in cases where patients cannot verbalise their pain properly they can relate particular behavioural expressions that indicate that patients are experiencing pain. The following quote from one of the participants illustrate this category:

"...the nurse observe the behaviour of the patient, maybe the finger are splaying or he's restless or it he's kicking his legs..." R15

Arnstein (2010:69) states that for patients who cannot communicate verbally, general physiological and behavioural signs provide information about pain to compensate for the lack of information about the patient's perceptions of discomfort.

Four subcategories emerged from this category, namely: *facial expressions*, *vocalizations*, *actions that could imply pain* and *use of FLACC scale for non-verbal patients*.

#### 3.4.2.2.1 *Facial expressions*

The subcategory *facial expressions* refers to abnormal expressions of the face that may indicate pain in patients that are unable to verbalise the pain. The following quotations relate to this finding:

“Usually on their facial expression[s]...” R11

“...you can also see in their face[s] if they are really in pain...” R4

The common facial expressions when patients are experiencing pain mentioned by participants in this study are: ‘*smiling, grimacing, grinning, frowning and sad faces*’ as illustrated in the following:

“Yes, because it is subjective, and you can show it also with facial grimace...” R14

Several authors support the view that facial expressions can indicate pain. Fishman, Ballantyne and Rathmell (2012:785) and Arnstein (2010:69) illustrate that among the behavioural indicators of pain displayed by people unable to communicate their pain the first one is facial expression. The common facial expressions suggestive of pain include grimacing, clenched teeth, and tightly shut eyes.

#### 3.4.2.2.2 *Vocalizations*

Common vocalizations of pain are: *crying, shouting, screaming, moaning, groaning and frequently calling*. The following passages illustrate this subcategory:

“The patient will be crying.... he will moan, groan [and] shout...” R17

“Sometimes they are not talking and other patients they are screaming.....sometimes the patient [is] frequently calling...” R8

Behavioural indicators of pain are described in literature. Fishman et al (2012:785) and Arnstein (2010:69) state that common behavioural indicators of pain are vocalizations, such as moaning, groaning, crying, or screaming.

#### 3.4.2.2.3 *Actions that could imply pain*

The subcategory ‘*actions that could imply pain*’ emerged from descriptions of conduct by patients who experience pain. The quotes below describe this subcategory:

“...the nurse observes the behaviour of the patient, maybe the finger[s] are splaying or he’s restless or if he’s kicking his legs...”  
R15

The participants affirmed examples of the following frequent actions that indicate the presence of pain, namely: *anger, anxiety, irritability, sweating, shivering, restlessness, uneasy, scratching the site, sleeplessness and reluctant to mobilize*. The excerpts below illustrate the behaviours that participants interpret as indication of pain:

“...anxious, sweating [and] sometimes shivering because of pain...” R 17

“...they’re very restless...” R20

Pasero and McCaffery (2011:126) state that behaviours suggest pain.

#### **3.4.2.2.4 Use of FLACC scale for non-verbal patients**

Participants use the FLACC scale to recognise and rate the severity of the pain in patients who cannot self-report their pain. The acronym ‘FLACC’ refers to five categories, namely: “Face, Legs, Activity, Cry, Consolability” used to observe the behavioural cues that indicate presence of pain. The following statement illustrates this subcategory:

“FLACC scale is for nonverbal patient assessment based [on] one, two, three, four, five... we can see from the face expression, from the legs, activity, cry and consolability”R1

Stites (2013:70) describes the FLACC scale as an adult nonverbal scale for pain assessment.

#### **3.4.2.3 Observations of physiological responses to pain**

In the category ‘observations of physiological responses to pain’ participants stated that vital signs such as blood pressure, heart rate and respiration are used to assess pain. The following quote illustrates the category:

“When you check the vital signs”R10

The category 'observations of physiological responses to pain' is considered by a number of authors as a measure of pain assessment although in contrast it is considered by some authors as poor indicators of presence of pain. Pasero and McCaffery (2011:25) state that it is commonly expected that in physiologic response to pain there will be elevated vital signs.

Three subcategories of the 'category observations of physiological responses to pain' emerged, namely: '*elevated blood pressure, increased heart rate and increased respiratory rate.*'

#### 3.4.2.3.1 *Elevated blood pressure*

Participants highlighted that vital signs may give them an idea that patients are experiencing pain such as increased blood pressure. The following quotes illustrate the participants' views about this subcategory:

"...blood pressure will shoot because of pain..." R17

"Sometimes we'll just see from the vital signs if the BP increase[s]..." R7

Bond and Simpson (2006), cited in Gregory (2014:83) describe that acute or nociceptive pain is accompanied by a stress response indicated by an increased heart rate and raised blood pressure and may cause sweating and pallor.

#### 3.4.2.3.2 *Increased heart rate*

Participants maintained that patients' heart rate may increase as the sign of experiencing pain. The following quotes display the participants' insight about this subcategory:

“...the increase of the heart rate can be one sign of the pain.” R19

“Sometimes you can from vital signs, vitally maybe tachycardia” R1

Arnstein (2010:69) declare that the onset of acute pain stimulates the sympathetic nervous system, resulting in increased heart rate.

#### 3.4.2.3.3 *Increased respiratory rate*

An increased respiratory rate could indicate that patients experience pain. It was said that:

“Sometime she will be having this respiration, tachypnoea because of pain” R17

Weber and Kelly (2009:92) state that pain elicits a stress response in the human body triggering the sympathetic nervous system resulting in physiological responses such as increased respiratory rate and sputum retention that could result in infection and atelectasis.

### **3.4.3 Theme 3: Management of post-operative pain after THR and TKR surgery**

Theme three relates to pain relief strategies employed by the participants in management of post-operative pain and the descriptions of their role to ensure effective pain control for patients after total hip or knee replacement surgery. This is discussed under two categories that emerged, namely: the pain relief interventions used and nurses' role to enhance pain relief interventions. Table 3.4 depicts theme three's categories and subcategories.

**Table 3.4 Theme 3: Management of post-operative pain after THR and TKR surgery**

Theme	Category	Subcategory
<b>Theme 3: Management of post-operative pain after THR and TKR surgery</b>	Pain relief interventions	• Non-pharmacological interventions
		• Pharmacological interventions
	Nurses' role to enhance pain relief interventions	• Maintaining goal for pain relief
		• Reassessment of pain
		• Collaboration amongst multidisciplinary teams
		• Monitoring adverse or side effects of analgesia
• Management of adverse or side effects of analgesia		

### **3.4.3.1 Pain relief interventions**

The findings showed that the participants reacted to post-operative pain by employing pain relief strategies. The following selections indicate this category:

“...they are in pain especially if they are not well managed, that’s why we give regular pain killers and then you know, if they have this epidural..., you have to increase it if they are in pain [and] do non-pharmacological things until...pain is below four.”R3

Kucha’lik, Granath, Ljunggren, Magnuson, Lundin and Gupta (2013:1) state that optimal method for alleviation of pain is needed for patients who had total hip arthroplasty as postoperative pain can influence postoperative recovery and result in delayed mobilisation and prolonged hospitalisation.

Two subcategories allied to the category ‘pain relief interventions’ emerged from the participants’ discussions, namely: ‘*non-pharmacological interventions* and *pharmacological interventions*’. The following statement illustrates the two subcategories:

“...give analgesia and then encourage also to do non-pharmacological interventions” R17

Gregory (2014:24) recommends that once pain has been identified and assessed it is managed by using pharmacological and non-pharmacological interventions, often in combination.

#### 3.4.3.1.1 *Non-pharmacological interventions*

Examples of ‘*Non-pharmacological interventions*’ mentioned by participants to manage pain include: ‘*application of knee immobilizer, application of ice packs, application of abduction pillows, deep breathing exercises, change of body positions; use of diversional therapies; allowing the patients to socialize, provision of quiet environment, massage, spiritual therapy by reading the Quran or doing their prayers, reassurance of the patient and use of relaxation techniques*’. Participants said the following:

“...non-pharmacological you can have deep breathing exercises, incentive spirometry, you can reposition your patient, relaxation techniques and you need to have a social support from the family, you can teach the patient and the family as well...” R3

“Okay, ice packing also, it’s one of the common method of relieving pain” R17

The use of non-pharmacological interventions to manage post-operative pain has been investigated by several researchers. Pellino, Gordon, Engelke, Busse, Collins, Silver and Norcross (2005:184), recommend the use of non-pharmacological measures that include a radio/cassette tape player with ear phones, a tape of soothing relaxing music, an audiotape that guides the patient through progressive muscle relaxation, a handled nonelectric plastic massager with instructions on methods of massaging any nonsurgical areas, soft squeezable ball, and a brief booklet with information about use of various forms of relaxation and descriptions of the use of massage, heat and cold.

#### 3.4.3.1.2 *Pharmacological interventions*

Most of the participants mentioned that while administering the prescribed analgesia, they do follow the guidelines prescribed by the hospital. The following quote illustrates this subcategory:

“Give analgesic as ordered that is part of nursing care...” R17

Aziato and Adejumo (2013:4) indicate that nurses in their study responded to post-operative pain by using pharmacologic and non-pharmacologic measures.

Outlines of ‘*Pharmacological interventions*’ indicated by the participants to manage pain include: ‘*non-opioid analgesics, non-steroidal anti-inflammatory drugs (NSAIDS), opioid analgesia, epidural analgesia, patient controlled analgesia and peripheral nerve blocks*’. The mutual examples of outlined analgesia specified by the participants for non-opioids analgesics include: acetaminophen; for opioid analgesia were: morphine sulphate, hydromorphone, fentanyl, percocet, tramadol and tylenol 3; for non-steroidal anti-inflammatory drugs were: Ketorolac, brufen and Celecoxib; for epidural analgesia they mentioned use of combination of opioid and local anaesthetic drugs; for patient

controlled analgesia they use: morphine, hydromorphone and fentanyl; and peripheral nerve block they mostly use ropivacaine 0.2%.

The following quotes display the participants' insight about this subcategory:

"I normally give narcotics like morphine, hydromorphone, tramadol, PO tylenol 3 or Percocet..." R7

"...post-operatively either they manage the pain through PCA or epidural..." R2

"...Ketorolac and in between they give some metoclopramide or other adjuvant like Celecoxib or Brufen..." R4

Gregory (2014:25) supports the use of weak opioids such as codeine and tramadol, and strong opioids such as morphine, oxycodone and fentanyl to deal with acute and chronic pain. Maheshwari et al (2009:1420) confirm that epidural analgesia infusions provide superior analgesia, may consist of a local anaesthetic, an opioid or a combination and may be useful after TKA (total knee arthroplasty) and THA (total hip arthroplasty) for pain control. Strassels, McNicol and Suleman (2005:1909) confirm participants' views that NSAIDS are effective after various surgical procedures, such as thoracotomy, major orthopaedic surgery, upper and lower-abdominal surgery, and minor outpatient surgery. Smith-Miller, Harlos, Roszell and Bechtel (2009:246) confirm the use of PCA to manage post-operative pain for patients after hip or knee replacement.

#### **3.4.3.2      *Nurses' role to enhance pain relief interventions***

This category demonstrates that nurses play an important role in promoting and providing optimal management of post-operative pain. Nurses are advocates for patients suffering pain after surgery. These are additional nursing actions to

further improve the pain relief interventions such as non-pharmacologic and pharmacologic:

#### 3.4.3.2.1 *Maintaining goal for pain relief*

This subcategory relates to participants' descriptions that they follow the pain nursing care guidelines to manage pain until achieving a satisfactory outcome level of pain. The participants explained that if pain is not well controlled within the standardized pain management goal they will escalate to the physician or acute pain service team. The statements made by participants are given below:

"...our main goal is to maintain pain score less than four over ten."R2

"The guideline is: pain should be below four" R17

Arnstein (2010:9) confirms that desirable patient-centred outcomes are best delineated when they present objective, measurable goals the patient says he or she would do if pain was satisfactorily controlled.

#### 3.4.3.2.2 *Reassessment of pain*

The subcategory '*reassessment of pain*' emerged from participants' views that after pain relief interventions they need to reassess the pain to evaluate the effectiveness of the interventions to achieve satisfactory pain control. The participants explained that the outcome of pain relief interventions is assessed within the timeframe as stipulated in their pain nursing care guidelines. The timeframe for reassessment of pain is based on the route of administration of analgesia. For intravenous analgesia the participants explained that they reassess the pain after thirty-minutes, for oral and intramuscular after one hour

and for their non-pharmacological interventions immediately after application. Below are quotes for this subcategory:

“Because I have to see that medication is effective for the patient...” R6

“For oral we have time frame for one hour to follow-up, for IV we have half an hour to follow-up...and for non-pharmacology immediately...” R1

Gregory (2014:29) recommends that evaluation or reassessment of pain to establish the effectiveness of interventions is as important as the initial assessment.

#### 3.4.3.2.3 *Collaboration amongst multidisciplinary teams*

Participants described that their essential role to enhance effective pain relief interventions is to collaborate with other health care professionals and the patient's family. The key health care professionals mentioned by most of the participants are namely: anaesthetist/anaesthesiologist, acute pain service (APS) team, surgeons, pharmacist, physiotherapists, occupational therapists and the support staff such as patient educator and unit assistant. The 'patients' family members' play a supporting role to the patient in pain management. This finding is supported by the following statements:

“...we primary nurse[s] are involved, doctors are involved, especially acute pain services...I can also involve the patient educator” R2

“...we should involve the physiotherapist, the occupational therapist, in case we need something...” R10

Yoost and Crawford (2015:897) state that various members of the health care team specialise in different ways of accomplishing pain relief, a multidisciplinary

approach is often to achieve pain relief goals. The multidisciplinary team collaborates to develop a plan of care for patient's pain management.

#### 3.4.3.2.4 *Monitoring adverse or side effects of analgesia*

Participants agreed that pain medications may contribute to adverse or side effects that need monitoring after administration to ensure that patients continue with pain relief interventions if needed. The excerpt below illustrates the descriptions of this subcategory:

“...we can monitor if there [are] any side effects or whatever, so [that] we can have a nursing intervention as soon as possible...”R11

Most of the participants mentioned that the common adverse or side effects to be monitored are: *constipation, dizziness, drowsiness, headache, itchiness, hypotension, nausea and vomiting, respiratory depression and urinary retention*. One of the participants said:

“They do experience some side effects such as: hypotension, nausea and vomiting and sometimes respiration is eight or below ...”R17

Gregory (2014:29) recommends monitoring side effects, such as gastric irritation and constipation, to ensure patients continue with their medication.

#### 3.4.3.2.5 *Management of adverse or side effects of analgesia*

To ensure effective pain management and reverse common adverse or side effects the participants reported that they mostly use medications such:

'*diphenhydramine*' (antihistamine) for itchiness, '*ephedrine*' (adrenergic) for hypotension, '*granisterone*' and '*metoclopramide*' (antiemetics) for nausea and vomiting and '*naloxone*' (opioid antagonist) for respiratory depressions and oversedation. For this subcategory, some of the participants said:

"If patients [are] having pruritus then we can give diphenhydramine..." R11

"For the respiratory depression we also prepare the naloxone..."R18

Momeni, Crucitti and De Kock (2006:2329) endorse the management of common adverse effects such as nausea and vomiting, pruritus, respiratory depression, sedation and confusion and urinary retention.

#### **3.4.4 Theme 4: Patient education and the involvement of loved ones in pain management**

In Theme four: 'Patient education and the involvement of loved ones in pain management', two categories emerged, namely 'pain education' and 'involvement of family members'. The participants' main purpose to engage the patients and their loved ones through education is to achieve effective pain control and patient satisfaction. Table 3.5 indicates theme four's categories and subcategories.

**Table 3.5 Theme 4: Patient education and the involvement of loved ones in pain management**

Themes	Category	Subcategory
<b>Theme 4:Patient education and the involvement of loved ones in pain management</b>	Pain education	<ul style="list-style-type: none"> <li>• Education regarding:               <ul style="list-style-type: none"> <li>• Pain assessment tools</li> </ul> </li> </ul>
		<ul style="list-style-type: none"> <li>• Patients' report of pain</li> </ul>
		<ul style="list-style-type: none"> <li>• Patients' rights about pain Management</li> </ul>
		<ul style="list-style-type: none"> <li>• Available options for pain Management</li> </ul>
		<ul style="list-style-type: none"> <li>• Side effects of analgesia</li> </ul>
		<ul style="list-style-type: none"> <li>• Provision of pamphlets</li> </ul>
	Involvement of family members	<ul style="list-style-type: none"> <li>• Education for family members</li> </ul>

#### **3.4.4.1 Pain education**

The importance of pain education to achieve effective pain management has been stressed. The statements below substantiate this category:

“Okay, at first we have to provide patient education, so if we cannot explain in Arabic, we can ask the assistance of the unit assistant to explain it for us.” R2

“I educate them what they should do...regarding the pain management.”

R5

Hughes (2008:9) states that patient and family education has been a central recommendation for acute pain management.

Subcategories allied to the category 'pain education' that emerged relate to education regarding: '*pain assessment tools*', '*patients' report of pain*', '*patients' rights about pain management*', '*available options for pain management*' and '*side effects of analgesia*'. Another subcategory linked to category 'pain education' includes '*provision of pamphlets*.'

#### 3.4.4.1.1 *Pain assessment tools*

Participants mentioned that they give education to patients about how to use '*pain assessment tools*' such as pain rating scales for accurate pain assessment which will promote achievement of effective pain relief. One of the participants said:

“...educate them about the pain tools we are using here in the hospital which is numeric, zero to ten...” R10

Yüceer (2011: 477) states that patient family should be educated in identifying, use of the pain scale, factors affecting the pain, pain treatment options, side effects of the treatment, and training required for the treatment such as use of PCA device.

#### 3.4.4.1.2 *Patients' report of pain*

Patients are educated to report their pain to health care providers in order to receive timely and appropriate pain relief interventions. The quote below illustrates this subcategory:

“...we encourage patients to verbalize pain.” R9

Hughes (2008:10) states that the essential element of pain education includes telling the patient the following: ‘Your responsibility in achieving good pain control is to tell us when you are experiencing pain or when the nature or level of pain changes.’

#### 3.4.4.1.3 *Patients’ rights about pain management*

Participants include information about ‘*patients’ rights about pain management*’ during patient education. The participants deem that to engage the patients they need to know that it is within their rights as patients to seek from the healthcare providers adequate pain control and to be free from pain. One of the participants said:

“Patients’ rights that they deserve to have their pain managed while they are in the hospital.” R13

Ware, Bruckenthal, Davis and O’Connor-Von (2011:31) recommend in their study to determine the educational needs for and barriers of advocacy for nurses with patients experiencing pain that educating patients about their rights to ask for pain medication and to have their pain treated is an important nursing responsibility.

#### 3.4.4.1.4 *Available options for pain management*

The subcategory ‘*available options for pain management*’ emerged from participants declaration that they educate the patients about available pain management options such as patient controlled analgesia, epidural analgesia, peripheral nerve block and generic pain management strategies that include pharmacological and non-pharmacological approaches. The excerpt below illustrates this subcategory:

“Yes, so they come back to us [and] they already know how to use the PCA, [and] we usually just re-educate them about the PCA when they come to the ward ...” R11

Sinatra et al (2009:208) recommend that patients should be aware of a number of general factors important to their pain relief that includes options available for further treatment of acute pain and possible side effects and complications.

#### 3.4.4.1.5 *Side-effects of analgesia*

The participants highlighted in section 3.4.3.2 the side effects of analgesia. Participants believe that patients need to be educated regarding the side-effects of analgesia. The passage below designates this subcategory:

“He...should be instructed about possible side effects and he should definitely have call bell within reach to call the nurse anytime he feels any discomfort...”R15

Kastanians, Denny, Robinson, Sabo and Snaith (2009:28) declare that informational content about postoperative pain and pain management that patients identify as being most important is about expected side effects of medications, and how to manage them.

#### 3.4.4.1.6 *Provision of pamphlets*

Pain education could be shared through the ‘*provision of pamphlets*’ to reinforce the education provided to patients after total hip or knee replacement surgery. Participants suggested the provision of a hand-out in this regard:

“You need to give them also the pamphlets so that they can understand why and how you manage the pain” R18

“...we will give the leaflet to the patients to read, that is Arabic and English...” R19

The Joint Commission Resources (2003:89) confirms the above views of the participants that on arrival at the center patients are given a copy of a brochure of “Pain Management Techniques for Patients” created by the center.

### **3.4.4.2        *Involvement of family members***

#### *3.4.4.2.1                      Education for family members*

The category ‘involvement of family members’ emerged from the sub-category *education for family members*. Participants felt that family members and significant others play a major role and need to be engaged in management of patients’ pain for effective pain control. One of the participants said:

“We involve the family by educating them” R14

Yüceer (2011: 477) supports the participants’ views that successful pain management requires a team effort, which includes the patient and family education.

## **3.5 SUMMARY OF ANALYSIS OF FIELD NOTES**

The field notes were a record of the participants’ main ideas during the conversations in brief texts to see the patterns constructed. The data analysis helped the researcher to find ideas generated in relation to the objectives of the

study. Most of the categories and subcategories also appear in the researcher's field notes even though analysed in participants' voices. The researcher's observations were that most of the participants were relaxed and comfortable during the interviews, only two interviews were interrupted even though "*do not disturb*" sign was hanged on the door. The participants were familiar with the pain management strategies used for post-operative pain in patients who had the total hip and knee replacement surgery.

### **3.6 CONCLUSION**

This chapter analysed and presented findings from the study constructed from participants' descriptions. The initial analysis was the presentation of the demographic data of the participants. This was followed by presentation and analysis of interview findings together with field notes adopting Creswell's (2013) "data analysis spiral". The researcher honoured the participants' voices as priority for this study, therefore all categories and subcategories were supported with the views from participants and were placed in quotation marks. The texts, paragraphs and phrases conversing descriptions related to study objectives were highlighted in different colour codings to establish the meaning of the data. Main themes were constructed from the clustered categories and subcategories from the researcher's interpretation. The data were presented in tables for comprehensibility.

The next chapter will present discussion of findings and literature control, which will be used to contextualise and confirm the research findings and to inform the discussions in the final chapter.

## CHAPTER 4

### DISCUSSION OF FINDINGS AND LITERATURE CONTROL

#### 4.1 INTRODUCTION

Chapter 3 dealt with the findings of the study. In this chapter the findings will be discussed in view of relevant literature for verification and trustworthiness.

The literature control will be utilized to compare the existing body of knowledge on the concept of post-operative pain management of patients after total hip or knee replacement surgery and detailed on the theoretical framework informing the study conclusions. Botma et al (2010:197) state that the purpose of literature control is to compare the findings of the study with existing literature and draw conclusions about (1) other studies that reported similar findings; (2) other findings reported in the literature that closely relate to the findings in the current study; or (3) the unique findings of this study. In this chapter the findings of this study are compared and contrasted with literature.

There is not much written about post-operative pain management after total hip or knee replacement surgery *per se* in the Kingdom of Saudi Arabia. The literature control will therefore be channelled by discussion of the emerged main themes identified from data analysis in confirmation with the middle-range theory of acute pain management proposed by Good (1998), cited in Peterson & Bredow (2009:68-69) and Good (1998:120-124).

The literature control was therefore used by the researcher as verification tool to verify the emergent themes with relevant literature.

## **4.2 DISCUSSION OF THEMES AND LITERATURE CONTROL**

Four themes emerged following the analysis of data obtained during interviews with nurses responsible for pain management in patients who have undergone THR and TKR surgery. These are:

- Theme 1: Surgical nurses' descriptions of post-operative pain
- Theme 2: Assessment of pain in patients after THR and TKR surgery
- Theme 3: Management of post-operative pain after THR and TKR surgery
- Theme 4: Patient education and the involvement of loved ones in pain management

Each theme will be discussed separately.

### **4.2.1 Surgical nurses' descriptions of post-operative pain**

The participants' insight about post-operative pain in this study was categorized into four elements.

#### **4.2.1.1 *Subjective experience***

The study found that post-operative pain is a subjective experience emanating from patient's report of pain or patient's expression of pain.

A study done in Ghana by Aziato and Adejumo (2013) identified the factors that influenced nurses' responses to patients' pain. Nurses within the medico-sociocultural context of Ghana perceived post-operative pain (POP) as an individual subjective phenomenon. Nurses reported that individual patients responded to pain differently. According to D'Arcy (2011:37) pain is a subjective

report of a phenomenon that is a representation of the patient's experience with the pain.

#### **4.2.1.2      *Duration of pain***

Participants explained that pain commonly occurs immediately after THR and TKR surgery until a few days post-operatively. Although pain experiences are severe immediately post-operatively its acuity subsides within a few days. Joelsson et al (2010:2836) found that during the first few days after surgery patients developed intense postoperative pain. D'Arcy (2011:43) recommends listening to the patient's report of pain using a basic element of pain assessment such as duration of pain, while Pasero and McCaffery (2011:52) recommends the use of an initial pain assessment tool to guide the clinician in collecting information about the onset, duration, variations and rhythms of a patient's pain.

#### **4.2.1.3      *Location of pain***

Participants noted that patients described their pain in terms of location. D'Arcy (2011:42), Pasero and McCaffery (2011:50) and Arnstein (2010:66) corroborate the findings in this study that patients may describe their pain by marking or noting the location of pain on their own bodies. The description of pain in terms of the location is frequently noted in the hip and knee surgery sites in patients who have undergone THR and TKR surgery.

#### **4.2.1.4      *Severity of pain***

The severity of pain has been described in terms of three levels namely, no pain to mild pain, mild to moderate pain and predominantly moderate to severe pain. Some participants expressed these levels in terms of numerical values. They

maintained that patients would experience only mild to moderate post-operative pain if adequate pain control regimens are followed. D'Arcy (2008:20) states that older patients can use the 0 to 10 numeric pain intensity rating scale: 0 is no pain and 10 is the worst possible pain. Some patients prefer to use the verbal descriptor scale, which uses words such as mild, moderate or severe to rate the severity of the pain.

D'Arcy (2011: 57) also explains that zero means 'no pain'; *mild pain* is considered to be pain ratings in the 1-3 range; *moderate pain* ratings in the 4-6 range and *severe pain* is pain ratings in the 7-10 range. The participants explained these pain ratings to describe post-operative pain of patients after total hip or knee replacement surgery.

McCartney and Nelligan (2014:83) state that total knee arthroplasty (TKA) is a painful and common orthopedic procedure amongst elderly patients that frequently results in moderate to severe pain in the immediate postoperative period.

Kucha'lik et al (2013:4) state that patients who had total hip arthroplasty experience pain on movement that can be moderate to severe, which limits mobilization and reduces patient satisfaction.

#### **4.2.2 Assessment of pain in patients after THR and TKR surgery**

Participants explained that they use subjective measures, observations of patients' behavioural responses and observations of patients' physiological responses to assess pain in patients after THR or TKR surgery as part of assessment of pain.

#### **4.2.2.1 Subjective assessment of pain**

Surgical nurses explained that they screen and assess pain subjectively in patients who can self-report their pain by asking the location of pain, duration of pain, the aggravating factors of pain and the intensity or severity of pain using the pain rating scales, such as Wong Baker Faces scale and Numeric Rating scale. The findings are supported by literature sources. Alasiry and Löfvenmark (2013:17) reported that nurses followed a subjective approach of pain assessment in patients having myocardial infarctions.

Arnstein (2010:65) states that to obtain the patient's self-report of pain is considered the most accurate measurement available and recommend the nurses to use the WILDA pain assessment guide to ask about pain which include: the words, the intensity, location, duration and aggravating and alleviating factors. The health care provider should believe the patient's report of pain and act on it accordingly to provide adequate pain management for the patient as recommended by D'Arcy (2011:39).

APS (2003:33) cited in Pasero and McCaffery (2011:21) coincide that self-report should be the primary source of pain assessment. The recent study confirms the above mentioned authors' findings.

#### **4.2.2.2 Observations of behavioural responses to pain**

Participants make use of their observations of behavioural responses to pain, such as facial expressions, vocalizations made by the patient, the behaviours displayed by the patient and they include FLACC scale for non-verbal patients to assess pain. This is supported by literature. According to Arnstein (2010:69) the common behavioural indicators of pain include immobilization, guarding, holding,

or rubbing the hurt body part while Pasero and McCaffery (2011:25) describe visible signs of discomfort, behavioural or physiologic, including grimacing, rigid body posture, limping, frowning, or crying. Other authors such as Fishman et al (2012:785) confirm behavioural indicators of pain such as vocalisations, immobilizations, guarding, holding, or rubbing the hurt body part, changes in mental status, changes in interpersonal interactions or changes in activity patterns or routines while Decker (2009:342) identifies cues of behaviours such as reluctance to move, or to be touched, restlessness, quivering and irritability.

Participants' observations of behavioural responses to pain in patients who had total hip or knee replacement surgery concur with views expressed in studies consulted.

#### **4.2.2.3      *Observations of physiological responses to pain***

Participants in this study reported that their observations of physiological responses to pain, such as elevated blood pressure, increased heart rate and increased respiratory rate were used to determine if a patient has pain. The above view is supported by the literature as Linton (2014:220) explains that nurses observe behavioural and physiologic signs of acute pain when the patient guards or rubs a body part, wrinkles the brow, bites the lip, and has changes in the heart rate, blood pressure and respiratory rate while Alasiry and Löfvenmark (2013:17), state that the objective nursing assessments of pain includes vital signs. In contrast Arbour and Gélinas (2010:90) advise nurses to use vital signs with caution when evaluating a patient's pain and recommend that vital signs be used as a cue when behavioural indicators are not available.

### **4.2.3 Management of post-operative pain after THR and TKR surgery**

The effective management of post-operative pain in patients who have undergone hip and knee replacement surgery were described in terms of the pain relief interventions and the nurse's role to enhance these interventions.

#### **4.2.3.1 Pain relief interventions**

This study found that nurses apply non-pharmacological interventions (see section 3.4.3.1), such as the application of knee immobilisers, ice packs, abduction pillows, deep breathing exercises and change of body positions for pain relief. Other interventions include the use of diversional therapies; allowing the patients to socialize, provision of quiet environment, massage, spiritual therapy by reading the Quran or doing their prayers, reassurance of the patient and use of relaxation techniques.

Tracy (2010:154) confirms the benefits of non-pharmacological methods of pain relief in patients who had joint replacement surgery. McCaffery and Pasero (1999) cited in McLennon (2007:9) refer to non-pharmacological interventions as alternative, complementary, unconventional, and non-invasive but state that these interventions should not be used as a substitute for analgesic medications.

Smeltzer et al (2010:256-258) also declare that non-pharmacologic nursing activities can assist in pain relief, usually with low risk to the patient and illustrated the following activities to promote comfort: massage; thermal therapies e.g. ice and heat therapies; transcutaneous electrical nerve stimulation; distraction techniques such as watching TV or listening to music; relaxation techniques such as breathing exercises; guided imagery using imagination; hypnosis; music therapy and alternative therapies such as therapeutic touch. Chan, Blyth, Nairn and Fransen (2013:1260) found that information on non-

pharmacological methods was not provided adequately to patients after total knee arthroplasty.

Secondly, the participants confirmed the use of pharmacological interventions for pain relief. They administer the analgesia as prescribed by the physicians. These include non-opioids analgesics, opioid analgesia; non-steroidal anti-inflammatory drugs; use of epidural analgesia; patient controlled analgesia and peripheral nerve blocks. The common examples of analgesia specified by the participants in this study for non-opioids analgesics was: acetaminophen; for opioid analgesia were: morphine sulphate, hydromorphone, fentanyl, percocet, tramadol and tylenol 3; for non-steroidal anti-inflammatory drugs were: Ketorolac, brufen and Celecoxib; for epidural analgesia they mentioned use of combination of opioid and local anaesthetic drugs; for patient controlled analgesia they use: morphine, hydromorphone and fentanyl; and peripheral nerve block they use mostly use ropivacaine 0.2%.

Ample references in the literature to pharmacological interventions for pain relief were found. Joelsson et al (2010:2835) found that pharmacological pain relief was 'effective' and 'sufficient' in patients who had hip replacement surgery. Maheshwari et al (2009:1419 -1421) describe the use of epidural catheter infusions with and without patient-controlled epidural analgesia (PCEA), combinations of epidural infusion and femoral nerve blocks, and femoral nerve block in conjunction with or without intravenous patient controlled analgesia (IV PCA) for pain relief. The authors include the use of agents with combined anti-inflammatory and analgesic properties, parenteral to oral agents such as toradol, morphine sulphate, oxycontin, acetaminophen and celebrex. These are modalities that support the views in this study.

McCartney and Nelligan (2014:84) and Kerr and Kohan (2008:177) indicate the use of regional and systemic analgesics, typically intravenous opioids, NSAIDs, and femoral nerve blockade (FNB) with or without anticonvulsant agent such as gabapentin or pregabalin to patients.

Kuchálik et al (2013:2) state that they used paracetamol, patient controlled analgesia and tramadol after total hip arthroplasty as rescue medication for pain management. Chumbley and Thomas (2010:35), explain that epidural analgesia is a common technique used to manage acute pain after major surgery and two main classes of medications are used: opioids and local anaesthetics. These are beneficial in reducing or eliminating pain.

#### **4.2.3.2      *Nurses' role to enhance pain relief interventions***

The surgical nurses indicated that they have responsibility and accountability in their role to ensure improved pain relief interventions to avoid patients suffering under their care. For optimal pain management of patients who have undergone hip and knee replacement surgery, the surgical nurses specified their role to enhance pain relief interventions. These include: to maintain the goal for pain relief; pain relief evaluation or reassessment of pain; collaboration amongst multidisciplinary teams; monitoring adverse/side effects of analgesia and management of adverse/side effects of analgesia to maintain balance between analgesia side effects.

Rejeh and Vaismoradi (2009:71) confirm that nurses should assist the patients in setting realistic pain management goals, while Smeltzer et al (2010:240) state that the role of the nurse is to identify goals for pain management, provide patient teaching, perform physical care, help relieve pain by administering pain relieving interventions, assess the effectiveness of those interventions, monitor for adverse effects, and serve as an advocate for the patient when the prescribed intervention is ineffective in relieving the pain.

#### **4.2.4 Patient education and the involvement of loved ones in pain management**

Patient education on the management of pain and the involvement of family members to support patients with pain, have been noted as important strategies in the alleviation of pain post-operatively.

##### **4.2.4.1 Pain education**

Participants explained pain education in terms of pain assessment tools, patients' report of pain, patients' rights about pain management, the available pain management options and side-effects of analgesia. A leaflet or hand-out containing information on these topics could enhance patient education on pain management.

Literature on educating patients and their loved ones on pain management addresses these different aspects. Hughes (2008:9) recommends that the patient, family member(s), and nurse collaboratively set a tolerable or satisfactory level of pain and function during the hospitalisation, which is documented either in the patient's room or record so that all clinicians are working toward the same goals for pain control.

Chaturvedi and Chaturvedi (2007:209) state that post-operative pain and its management include education and participation of patients and families. The authors of Joint Commission Resources (2003:89) recommend that persons with pain need to be given a copy of "Patients' Rights and Responsibilities" which explains that all patients are entitled to appropriate assessment and management of pain. Ware et al (2011:31) discuss nurses' responsibility, as advocates for patients suffering pain, to educate the patients about their rights to ask for pain medication and to have their pain treated.

Chan, Chan and Lin (2013:281) maintain that the provision of educational pamphlets with information on pre- and post-operative care; expected postoperative pain; pain assessment methods; pain management; cryotherapy; postoperative rehabilitative exercise; methods for safely rising from a bed and the use of walking aids could reduce levels of postoperative pain in patients recovering from total knee replacement surgery.

The findings of the present study confirm and are consistent with the findings of the above mentioned prior studies regarding pain education of the patients.

#### **4.2.4.2      *Involvement of family members***

Participants maintained that effective pain control is linked to the major role that family members play in the management of patients' pain. The education of family members engages them in pain management of the patient.

McLennon (2007:11) confirms that appropriate education about pain assessment and treatment should be considered part of a comprehensive plan for management of persistent pain and should be discussed with the patient and family so that individualized care based on preferences can be instituted.

### **4.3      CONCLUSION**

Chapter 4 presented and discussed the research findings in relation to the literature and indicated similarities and differences in the discussions of post-operative pain management in patients after total hip or knee replacement surgery. The views of nurses in this study on the nature of post-operative pain, assessment and management of pain after total hip or total knee replacement surgery concurred with literature on the management of post-operative pain and

underlined the role and involvement of patients and loved ones in a comprehensive approach to pain management in patients who have undergone total hip or knee replacement surgery.

Chapter 5 discusses the conclusions and limitations of the study and makes recommendations for addressing the problems and for further research.

## **CHAPTER 5**

### **SUMMARY OF FINDINGS, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

Chapter 4 presented the data that emerged from the interviews conducted with twenty (20) surgical nurses and compared them with supporting literature under the themes and categories that had emerged from the data analysis. This chapter presents an overview of the study, conclusions and limitations of the study and makes recommendations in relation to the findings.

#### **5.2 OVERVIEW OF THE STUDY**

The purpose of the study was to gain an understanding of surgical nurses' perceptions about the management of postoperative pain and strategies employed in management of pain in patients who had undergone total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.

The objectives of the study were to:

- Explore and describe surgical nurses' perceptions about post-operative pain and pain management in patients who had total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia.
- Identify strategies employed by surgical nurses in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia for post-operative pain management in patients who have had total hip or knee replacement surgery.

The study used a qualitative, exploratory descriptive approach. Twenty (20) surgical nurses from four orthopaedic wards participated in the study. Creswell's (2013) data analysis spiral guidelines were adopted and followed to analyse the data. Emic categories, subcategories and themes that emerged from the data were used to describe the phenomenon being explored. The Good's (1998) Middle-Range Theory of Acute Pain Management, was engaged as the theoretical framework for the study and will be applied to inform the conclusions or recommendations.

### **5.3 CONCLUSIONS RELATING TO THE STUDY FINDINGS**

The conclusions are drawn from the themes and categories derived from data collected from surgical nurses who collectively described their thoughtful insights about post-operative pain and pain management in patients who had total hip or knee replacement surgery in King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia. The themes are integrated, compared and applied to the structure proposed in Good's (1998) Middle-Range Theory of Acute Pain Management. The theory (Peterson & Bredow 2009:68-69) provides the structure of an acute pain management plan that can support an outcome of good pain control while minimizing negative side effects associated with potent pain medications. The theory is guided by three propositions for pain management, namely: (1) multimodal interventions, (2) attentive care and (3) patient participation.

The first theme, *surgical nurses' descriptions of post-operative pain*, deals with patients' subjective experiences of pain, the duration, location and severity of pain as described by surgical nurses responsible for pain management in patients who have undergone THR and TKR surgery. Nurses regard patients' verbalisation of a pain experience as a subjective experience that should be respected and attended to when expressed. Participants agreed that patients with inadequate pain relief interventions verbalise the pain in relation to the period of time that it exists, and the location of the pain. Pain is rated on a scale

of zero to ten. According to the participants in the study a majority of patients experience moderate to severe pain during the first three days post-operatively, where after pain is controlled on levels of mild to moderate pain or free from pain. This indicates that on the first post-operative days patients experience moderate to severe pain despite the interventions described in this study. Surgical nurses are able to identify the patients with unrelieved pain. Good's (1998) theory proposes identification of inadequate pain relief as part of attentive care as described in this theme (Good 1998:121).

The second theme, *assessment of pain in patients after THR and TKR surgery*, was described in terms of subjective assessment of pain, observations of behavioural responses to pain and observations of physiological responses to pain. Pain assessment includes patients' self-report of their pain experience and the use of pain rating scales. Participants agreed that pain expressed by the patient is more accurate. The nurses also observe actions or behaviours that could imply that the patient is experiencing pain as part of assessment. Participants check vital signs as part of pain assessment, such as increased blood pressure, heart rate and respiratory rate to recognise that the patient is experiencing pain. This reveals that the nurses are competent to detect pain in patients who cannot verbalise their pain by referring to abnormal vital signs. Participants confirmed that they assess patients who cannot verbalise their pain by using a non-verbal scale such as FLACC. This is in agreement with the proposal by Good's (1998) theory for regular assessment and reassessment of pain for maximum pain control (Good 1998:121).

The third theme emerged as the *management of post-operative pain after THR and TKR surgery*. Pain relief interventions and nurses' role to enhance pain relief interventions were described as strategies used to manage post-operative pain and nurses' role in this regard. Participants described different strategies of non-pharmacological interventions and pharmacological interventions that they

use for pain relief as discussed in section 3.4.3.1. It is evident that multimodal strategies are employed by the surgical nurses to manage post-operative pain. Good's (1998) theory also proposed the use of non-pharmacological interventions and pharmacological interventions as part of multimodal interventions. This study found that nurses maintain a goal for pain relief as part of achieving an effective outcome for their nursing care interventions to reduce post-operative pain and to maintain the pain score less than four over ten. They are using standardised measurable outcomes goals to effective pain relief intervention in order to optimise the pain relief. The findings indicate that the goal for pain relief is shared with the patient during patient and family involvement by means of patient education. Good's (1998) theory suggests that as part of patient participation, patient teaching and goal setting for pain relief are important (Good 1998:123).

In the last theme, namely *patient education and the involvement of loved ones in pain management*, surgical nurses described the importance of educating patients on pain and the involvement of family members to ensure adequate pain management. They confirmed that pain education includes information on pain assessment tools, patients' rights about pain management, the available options for pain management and possible side-effects of medication, and to report pain. The provision of educational pamphlets on pain management was recommended. The participants in this study were mostly expatriate nurses. It is therefore evident that a language barrier could pose a major problem to effective communication with the Arabic speaking patients in the endeavour to educate them on pain management. Good's (1998) third proposition recommend patient participation through patient teaching for pain management and mutual goal setting between the nurse and the patient which is essential to achieve good outcomes for pain control to achieve a balance between analgesia and side effects (Good 1998:121).

#### **5.4 LIMITATIONS OF THE STUDY**

The study was conducted in one hospital, King Abdulaziz Medical City, Riyadh, Kingdom of Saudi Arabia and the study sample reflects only four orthopaedic units. Although saturation of data was reached and findings reflect surgical nurses' perceptions about post-operative pain management in this hospital, findings cannot be generalized to all surgical nurses taking care of total hip or knee replacement surgery patients.

The researcher is a member of the pain team in this hospital and interacts regularly with nurses who participated in the study. This could have influenced participants' responses to questions and probing of answers during the interviews. The researcher used bracketing during interviews to limit researcher bias.

Despite the identified limitations, the study findings accomplished the purpose of this study to present the perceptions of surgical nurses regarding post-operative pain management of patients after total hip and knee replacement surgery.

#### **5.5 RECOMMENDATIONS**

Based on the findings of this study, the researcher makes the following recommendations:

##### **5.5.1 Recommendations for nursing practice**

The surgical nurses provide care to patients during the pre-operative and post-operative period and use specific medical knowledge and technical skills to manage pain in patients after total hip or knee replacement surgery. It is recommended that:

- Surgical nurses should demonstrate compliance to ongoing assessment and reassessment of pain relief interventions for effective and optimum pain control as part of pain management quality improvement strategies.

- Patient education about pain management be offered pre-operatively and repeated post-operatively to all patients and family members of patients who have undergone THR and TKR surgery.
- Expatriate nurses have access to Arabic speakers if necessary, to overcome language barriers and convey accurate messages during patient and family education on pain management.

### **5.5.2 Recommendations regarding continuing professional development plan for pain management**

It is recommended that:

- Individual nurses be given opportunities to participate in ongoing education in developed pain management courses to improve and broaden knowledge and skill competency.
- The Pain team be allowed to play a role in participating in review of practices, identification of learning needs, involvement in action plans and evaluation of practice outcome in pain management.

### **5.5.4 Recommendations for future research**

It is recommended that further research be conducted on the following topics:

- Research on patients' experiences about post-operative pain and pain management after total hip or knee replacement surgery.
- A study to determine the perceptions of patients about the impact of communication with health care professionals in pain management.
- A quantitative study to determine nurses' knowledge of assessment and management of pain in patients who have undergone major surgical procedures. This could provide different perspectives than those obtained in this qualitative study.

## **5.6 CONCLUDING REMARKS**

This chapter concluded the study on surgical nurses' perceptions about post-operative pain and pain management in patients who had total hip or knee replacement surgery. It also examined the strategies adopted by these nurses to manage pain in these patients. The findings revealed that surgical nurses perceive patients' pain as a subjective experience, expressed in terms of what the patient says it is.

Nurses who participated in the study adopted pain assessment and management strategies that concurred with those discussed and recommended in the literature on the topic. Despite this, the majority of patients reportedly experience moderate to severe pain during the first three days after surgery, before it is controlled on mild to moderate levels or before the patient is pain free. The implementation of recommendations to improve ongoing assessment and reassessment of pain relief interventions for effective and optimum pain control is considered critical. Equally, the prolonged involvement and collaboration of the pain team in management of post-operative pain in patients could be valuable to address pain within three days after surgery. The importance of education for patients and their loved ones, regarding post-operative pain management, is evident from the findings of the study.

It could therefore be concluded that the objectives of this study were accomplished.

The findings have enabled recommendations to be made which may benefit the management of post-operative pain of patients after total hip or knee replacement surgery.

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**Guidelines:**

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**ANNEXURE 1**

**Permission from UNISA**



**UNIVERSITY OF SOUTH AFRICA  
Health Studies Higher Degrees Committee  
College of Human Sciences  
ETHICAL CLEARANCE CERTIFICATE**

**HSHDC/187/2013**

Date: 29 May 2013 Student No: 3664-008-5

Project Title: Perceptions of surgical nurses regarding the post-operative pain management of patients after total hip or knee replacement surgery.

Researcher: Litaba Efraim Kolobe

Degree: MA in Nursing Science Code: MPCHS94

Supervisor: Prof MJ Oosthuizen  
Qualification: D Litt et Phil  
Joint Supervisor: -

**DECISION OF COMMITTEE**

**Approved**

**Conditionally Approved**

A handwritten signature in black ink, appearing to read "L Roets".

**Prof L Roets  
CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE**

**ANNEXURE 2**

**Permission from KAIMRC**

Kingdom of Saudi Arabia  
National Guard Health Affairs



المملكة العربية السعودية  
الحرس الوطني - الشؤون الصحية

Research Office



14528/14613/14633



1515



14571



researchoffice@ngha.med.sa

**MEMORANDUM**

Ref. #: RO/593/2013

Date: **(G) 21 OCTOBER 2013**  
(H) 16 Dhual Hijjah 1434

To: **PROF. AMIN KASHMEERY**  
Chairman, Institutional Review Board (IRB)  
National Guard Health Affairs

From: **DR. MAJED AL JERAISY**  
Chairman, Research Committee  
King Abdullah International Medical Research Center  
National Guard Health Affairs

*Mj* 21/10/13

**Subject: SP13/012- "Perceptions of Surgical Nurses Regarding the Post-Operative Pain Management of Patients after Total Hip or Knee Replacement Surgery" PI: LITABA EFRAIM KOLOBE**

Please see attached research proposal which was reviewed by the Research Office and was **granted scientific approval for this master student project.**

This study aims to describe surgical nurses' perceptions regarding management of post-operative pain of patients who undergone total hip or knee replacement surgery.

We are forwarding this project for your **expedited review and final approval.**

Feel free to contact our Research Office, Ext. 14613/14528, if you need more information.

Best Regards,

MJ/mia



**ANNEXURE 3****Semi-structured interview guide**

Semi-structured interview guide for the study: Perceptions of surgical nurses regarding the post-operative pain management of patients after total hip or knee replacement surgery.

Interview no:			
Date of interview:	DAY	MONTH	YEAR
Time of Interview:	Start	Finish	

**SECTION 1****Biographical data:**

The interviewer will use an (X) in the appropriate box indicated for the response from the interviewee.																				
1	Gender:	<table border="1"> <tr> <td>Male</td> <td></td> </tr> <tr> <td>Female</td> <td></td> </tr> </table>	Male		Female															
Male																				
Female																				
2	Age: Question: How old are you?	<table border="1"> <tr> <td>1</td> <td>Below 20 years</td> <td></td> </tr> <tr> <td>2</td> <td>20-29</td> <td></td> </tr> <tr> <td>3</td> <td>30-39</td> <td></td> </tr> <tr> <td>4</td> <td>40-49</td> <td></td> </tr> <tr> <td>5</td> <td>50-59</td> <td></td> </tr> <tr> <td>6</td> <td>Above 60 years</td> <td></td> </tr> </table>	1	Below 20 years		2	20-29		3	30-39		4	40-49		5	50-59		6	Above 60 years	
1	Below 20 years																			
2	20-29																			
3	30-39																			
4	40-49																			
5	50-59																			
6	Above 60 years																			

3	<p>Nationality: Question: What is your nationality?</p> <table border="1" data-bbox="522 369 1086 422"><tr><td></td><td></td></tr></table>								
4	<p>Educational level: Question: What is your highest tertiary qualification?</p> <table border="1" data-bbox="522 730 1086 953"><tr><td>Doctoral degree</td><td></td></tr><tr><td>Master degree</td><td></td></tr><tr><td>Bachelor degree</td><td></td></tr><tr><td>Diploma certificate</td><td></td></tr></table>	Doctoral degree		Master degree		Bachelor degree		Diploma certificate	
Doctoral degree									
Master degree									
Bachelor degree									
Diploma certificate									
5	<p>Professional Title: Question: What is your current position in this ward?</p> <table border="1" data-bbox="522 1045 1086 1188"><tr><td>Clinical Resource Nurse</td><td></td></tr><tr><td>Staff nurse 1</td><td></td></tr><tr><td>Staff nurse 2</td><td></td></tr></table>	Clinical Resource Nurse		Staff nurse 1		Staff nurse 2			
Clinical Resource Nurse									
Staff nurse 1									
Staff nurse 2									
6	<p>Location : Question: In which ward are you working?</p> <table border="1" data-bbox="522 1356 1086 1545"><tr><td>Ward 36</td><td></td></tr><tr><td>Ward 38</td><td></td></tr><tr><td>Ward 39</td><td></td></tr><tr><td>Ward 40</td><td></td></tr></table>	Ward 36		Ward 38		Ward 39		Ward 40	
Ward 36									
Ward 38									
Ward 39									
Ward 40									
7	<p>Years of experience as surgical nurse: Question: How many years did you work as surgical nurse in this ward?</p> <table border="1" data-bbox="989 1688 1086 1740"><tr><td></td></tr></table>								

## SECTION 2

<b>Central Question:</b>
Tell me about your views regarding the post-operative pain management of patients after total hip or knee replacement surgery in King Abdulaziz Medical City Hospital. (The conversation may lead to the following probe questions):
<b>Probe questions:</b>
<b>Question 1:</b>  Please tell me what you understand about post-operative pain in patients who had total hip or knee replacement surgery?
<b>Question 2:</b>  How do you identify if patients who had total hip or knee replacement surgery have pain and the levels of pain they experience?
<b>Question 3:</b>  What do you understand about pain management of patients who had total hip or knee replacement surgery?
<b>Question 4:</b>  What is the common nursing care that you provide to patients who had total hip or knee replacement surgery if they are experiencing post operative pain?
<b>Question 5:</b>  What are the nursing interventions do you implement to reduce post-operative pain in patients who had total hip or knee replacement surgery?
<b>Question 6:</b>  Are there any other strategies that you use in managing post-operative pain in patients who had total hip or knee replacement surgery?
<b>Question 7:</b>  How do you involve the patient experiencing pain after total hip or knee replacement surgery to achieve good outcomes for pain control?
<b>Question 8:</b>  What is your suggestion to improve pain management of post-operative pain in patients who had

total hip or knee replacement surgery?

(The probe questions may be followed by either of the following clarification probes)

**Clarification probes:**

- What do you mean by...?
- Can you tell me a more about.....
- Are there any reasons why do you think ....?
- Can you give me example/s of that...?  
Anything you would like to add.....?

We have come to the end. Thank you for your time to participate in this research project.

**ANNEXURE 3.1**

**Example of verbatim transcript of one respondent**

**Transcript code: 12**

**Date:** 01/07/2014

**Audio Recorder Code Number:** 140701\_0022.MP3

**Duration:** 25 min 10 sec

**Key:**

I = Interviewer

R12= Respondent no 12

I: Good morning Ms.R12

R12: Morning.

I: Yuh as we agreed on the study about pain management of post-operative pain, I just want to know your, your perception about uh post-operative pain of patients who had total hip replacement.

R12: Mmm.

I: But before that I will ask you some few personal questions uh, you are a female isn't it?

R12: Okay.

I: Your age, what's your age at the moment?

R12: Thirty-one

I: Thirty-one. And what is your nationality?

R12: Irish [Irish] from Ireland.

I: Yeah. Okay. What is your highest tertiary qualification?

R12: I have a degree in General Nursing and Bachelor of Science

I: Bachelor's degree. And you are your position in this ward?

R12: Is Clinical Resource Nurse.

I: Resource nurse. This is ward thirty-eight?

R12: Yes.

I: And then how many years did you work as a surgical nurse in this ward?

R12: I'm in my fifth year.

I: Fifth year.

R12: Mmm.

I: Okay. Now, as I said you'll be the one to make a talk and um I'll be listening to you. [Okay] And uh somewhere somehow, I'll be asking some questions for clarifications [Okay] But if, if you can make uh by all means to be the one to make [Sure] talk. Now as I said, may you please tell me about your views regarding the post-operative pain management of patients after the total hip or knee replacement surgery in King Abdul Aziz Medical City?

R12: Okay, so you want to know basically post-operative pain of patients come back to us. [Yes] basically from the recovery unit [Yes] Um sometimes there are, I know we're talking about the hip replacement, sometimes they may be looked after by the acute pain service in relation to epidurals and PCAs, uh which managed it effectively when we have them as backup. Um a lot of the times surgeons will prescribe regular analgesia. [Yes]. For a couple of days post-operatively, but we have a lot of different surgeons, so::: the::: it's not a standard in or we don't have a like ((swallow)) protocols as to post-operative pain management really, [Yes] And our nurses are all trained in relation to pain management, uhmm pain assessments, screening, uh how to escalate concerns and how to deal with pain of patients. [Yes ] Um post-operatively also.

I: Okay, now uh what do you understand about post-operative pain in patients who had total hip or knee replacement?

R12: Um well we know that they will have pain, it is expected now, okay. So pre-operative education like we says is very essential to let them be aware of, you will have some pain, you have a wound now. Uh for an instance, they may have a prosthesis there, um with hip replacement of course, um so the surgery as we know with this kind of patients is very detailed, very expensive can take a long time before the blood loss and so they will have a lot of pain we know that. ((Swallow)) [Yes] Before we even start with them. So to

educate the patients, to be informed with their pain, to let us know when you have pain, to let us know when your pain is minimal,[Okay] and because let us manage it effectively [Yes] um when it's when it's lower than pain scale let's say for instance um. So I think education of patients is very, very important. Once they are aware post-operatively to be that, they will have pain, and if it's gradual will shift most likely will you with the surgical pain um then will come uh um manage it effectively once we get exactly lower pain score.[Yes]Hopefully.

I: Hopefully. So how do you identify if patients have pain?

R12: So I'll screen our patients um using pain scales. Uh we use the Wong Baker's scale, our FLACC scale for non-verbal patients and then numerical scales for patients who were who are um literate basically [Yes] uh but not children. Um and also we look at the intensity of the pain and where the location is and um the durations. So if it's gradual there are where about in this pain, is it now for patient. Um we screen them once immediately within like thirty minutes of come back from OR. Um at this stage um they should be well controlled anaesthesia was looking after them. Um and if for what well control we'll start managing the according to our policies and procedures in the hospital, [yes] and in relation to medication of non-pharmacological management. ((swallow)) Um I will be escalating any concerns immediately to the surgeons regarding this initial post-operative pain, uh if I'm not able to manage it let's say with uh prescribed um analgesia.

I: Yes. Okay. Now what is the common or what is the highest level of pain that they experience from your experience these patients?

R12: ((Swallow)) Um yuh, I I've seen them experiencing um severe pain [Severe pain] with it. Because we know everybody experiences pain individually. Um

so we do see, I do definitely see patients with severe pain coming back post-operatively. Um and I would be questioning, a lot of the, the recovering nurses as to what if they had for pain relief if is in severe pain now, um I would be escalating these concerns immediately as well.

I: Yes. You said, you are using pain scales, what you mean by severe pain?

R12: Um, so severe pain I would mean, mean like a score between seven to ten. Um you know um at that end of the, at that end of the scale um and some of the patients to come back to pain score seven and at this time we will be moving them a little bit maybe with the transferring things, once they get back to some settled will try to manage it effectively.

I: Okay, now, what you understand about pain management of patients who had total hip or knee replacement?

R12: It's basically known that they will have mild pain. Um they will have some pain, but it's making sure that is managed effectively in order to rehabilitate this person who has had a hip replacement. [Yes] So we want to be able to get them moving, prevent DVTs, PEs. Um we want to be able to them to do breathing exercises without too much pain, and so that they absolutely won't get a chest infection or pneumonia associate with surgery. So if somebody's pain isn't properly managed we know that they're rehabilitation will maybe lengthen their stay in hospital essentially. So um pain regiment is probably one of the most important things post-operatively especially with hip patients. We know they're gona to start physiotherapy day one and of their after surgery and if they're not may um managed effectively by this stage, it will again pause this rehabilitation phase.

I: Yes. From this pain management, what is your expectation of pain level they

should experience?

R12: Um ((swallow)) something below four ((laughter)) and again it's individuals or some patients will tell you their pain score is three and they can't move in bed [Yes] so again, I need to look up my patient individually and say, actually you know I need to manage it more effectively and maybe at this stage get the pain nurse involved, get the pain team maybe ask the doctors to refer them because I know that this patient is experiencing it more um more ((swallow)) individually compared to maybe other people [Yes] Um so just to be aware of everyone's individual response to pain. [Yes]((clears the throat)) Um to know my patient, to know if he's moving, if it is not, if he's doing his deep breathing exercises and if he's not I need to escalate it immediately and be doing something about it.

I: About it, yes. Okay, now as you said what is the common nursing care that you provide to the patients who had total hip and knee replacement?

R12: In relation to pain management or of the pain?

I: Yes.

R12: >Um so again we will be screening and assessing very regularly. [Yes] Um we will be implementing non-pharmacological interventions, um with the hips making sure that maybe your abduction pillows was in place, um there's pressure relief for the heels, we're looking for swelling anything that might be related to surgery. Um in relation to something acute like swelling or haematomas or oedema those kind of things. [Yes] Uh signs of infections as well can be very painful for the patient; um ((swallow)) ↑What is the question again? [Uh common nursing intervention that you-] Okay, assessing and screening implement non-pharmacological interventions um given adequate pain relief, educating our patients about the side effects of the pain relief,

making sure they are ((cough)) aware of what we are taken actually ((swallow)) fully enough a lot of our patients that allergies here. I don't know what it is but I've seen a lot of allergies, Tramadol in it and these kind of things documented, so being aware as well of um allergies and what is we can give ,um knowing pain ladder, you know what I mean? Where do I start for mild pain what should I be giving, from moderate to severe, um and know when to escalate. Um so like I said the screening, assessing, implementing our pain and of course re-evaluating what we're doing all the time. So um knowing what we're doing is effective so that would be a big intervention.<

I: Now, based on what you said, is there any policy as you mentioned [mm] that there are policy and procedure [mm] are you saying this based on your policy, what are your policy?

R12: Yes, we have a policy on pain management and it's Nursing Departmental Policy that we follow at the moment and there is a hospital wide one as far as I know as well and basically it's telling us um what to do if patient has pain score of one to three or four to six or seven to ten. Is telling us when to come back and do relief evaluation, it's telling us what kind of non-pharmacological interventions we can do and to come back immediately to, to see the relief from those, it's giving us an escalation kind of policy when should I call my doctor, it's making us generalized of course we can deviate from this um guidelines as well as needed and just to be able to just justified deviation.[Yes] Um it guides us on when patients are for discharge like post-op the hip replacement, if there still a pain on discharge what should I be doing, um so guides our nurses on all those of kind of things as well.

I: Um can- can you uh tell me what is your policy based on discharged protocol?

R12: ((Swallow)) God , it's basically ((laughter)) is telling us, um if our patients are in moderate pain you need to inform your doctor or I'll call a discharge anybody [Okay] Who's in, he's in too much pain. We're quite luckier because we have a discharge pharmacist and to they pick up of a lot the time when the patients in because they will go and give the medication, the analgesia to the patients and tell them all about it, and some point the discharge pharmacy are comment also the same actually wasn't been the pain that the moment he want something. So this is um something as well, so it's guidelines to tell us, when we can hold discharge and when we can't and when we need escalate to the doctors [Yes] and if we're happy with somebody to go home with the with the either could score of let's say one to three uh because we know they will have a little bit of pain [Yes] just doesn't as long as we're managing it effectively. [Yes].

I: So how do you involve your patients uh after pain or patients who are experiencing pain after total hip or knee replacement surgery for achieving uh good outcomes for pain control?

R12: Yuh, like I said pre-operative um education is very important we find. Because we are doing a lot of audits at the moment I'm doing a lot of audits, and when our patients are adequately um aware of the management um program in hospital, when they're aware of what pain scales is because remember all our nurses are coming with different languages uh they don't speak their own Arabic. So once the patients has a background of what you are gona be asked, what you need to inform yourself and you will have pain tell them about their wound, what's happen during surgery, once they're more aware we find that we can manage more effectively. Constantly reinforcement of this education we find in our ward is really needed because our charged nurse is go around every morning and we have a patient educator [Yes] who reinforce this education on every patient, because

sometimes I find when we go to patient he say I have a pain score maybe of seven or ten. So, I re-educate them and I say would you like some pain relief of what can we do for you this is what we're supposed to do and he will say no, no, no it's fine and then he will change his mind and maybe tell us of the two at the moment. [Yes] And again is very important that we assess the patient when they're mobilizing, you know when they're doing things in beds, so not to stay on rest while it's your pain score like tell us also what is your pain is when you are up mobile, because we want you to be functioning. [Yes].Um in that's senses as well, so involving the patient education is, is very good in managing it, making sure our nurses are properly educated. All our nurses um new recruits are trained about pain management program, trained about policies, trained about how to screen and managed our patient's pain. They are all trained on that and then on a yearly basis we go back and retrained them [Yes].So if we find the, the discrepancy with the nurse that she's not very aware of what she should be doing, more education maybe development plans need to be put in place because if our nurses are not on board with their patients, we are not gona to manage effectively.[Yes] Also a factor would be um doctors, doctors are changing new all the time and we find that post-operatively prescribing other enough let's say in inverted commas we call that enough analgesia it's a problem, we find that, we want them to prescribe something regular for at least twenty-four hours, um but sometimes they are not, there isn't adequate analgesia prescribed. So we're escalating that and the policy helps us with that because it says, if nothing is prescribed call the doctor and get something prescribed. So that's another little bit of a challenge, seems to be better in our ward at the minute because at the moment we are trying to be an orthopaedic ward [yes] having our orthopaedic patients. So we deal with only one set of surgeons and we actually as a Manager and CRN we meet with the surgeons every couple of months and we go their meetings and say okay this is issues we're having and we want to have a good rapport and relationship with them and I think

this will be helps of pain management because then they are aware, ((swallow)) in that sense I don't know if we are doing make a difference but we have like do a doctors notes reminder for doctors [yes] this is what we need doing we need something prescribed. In the hospital at the moment also like our IV paracetamol is not available in our ward [yes] okay, um as floor stock. So gets delivered as needed so again our nurses need to have this kind of medications available or ordered as there fewer and unavailable in ward for immediate use. [Yes] we we're find that our patients will complain of pain and by the time we got IV paracetamol was nearly one hour. So this was the big problem we need to tackle and our managers still tackling the problem of trying to get the IV paracetamol on the ward. [Yes] So that's a kind of system problem I guess.

I: Yes. So based on what you said, what are the other strategies that you use here for pain management post-operatively?

R12: ((hhh))That was a lot of strategies we use like I said, we have our um pain scales at every bed side. [Yes] Um so it's easy for us to access them, easy for us to assess and screen our patients. Um we document in our system um in our computer system, so again it's easy for us to see trend of what the pain score has been over the last twenty-four hours, it's easy for the doctors to see, it's easy for us to see for manager effectively. Um we have specific documentation for our PCA and epidurals and we can see at a glance, um how well is this patient coping, um are they been managed effectively also. Like I said, we put in an action plan, we are trying to do audits. [okay] Um I find personally that audits are really good way as seen at a glance, what are the problems in your unit, how many patients are in pain at one time. So globally like huh like today for instance I did an audit this morning. Fourteen percent of our patients are in um with pain score of four and above. So um we're once we know where we are at we can get together as a team, and we

focus and look at the areas of concern, what patients were in pain, what patients are we not effectively managing properly. And again we have to look at that at a regular basis. [yes] We have a lot of new nurses coming into the ward, at the moment we fifty-five nurses. Each of them, each of our very good nurses are being floated. [Yes] I have all new nurses rotating so if I'm not on their back, we're not on the same page all the time it's very difficult to keep standard up, [mhm] you know. [Yes].

I: So, with epidurals which medications do you use for epidurals?

R12: Um they use fentanyl, um usually um with like um a local anaesthetic, uh ropivacaine I think sometimes [Yes] and so that we use the combination.

I: Combination.

R12: Mhm.

I: Do patients experience problems when they are on this medication?

R12: They do, um I don't know if it's an epidural related problem ((laughter)) and we do have a lot difficulty with do sometimes the catheters um again are moving and sometimes it come out. Um we do have problems with the blood pressure been um been um uh go hypotensive. [Yes] We do you have a lot of um nursing time to these patients. We know we know these are, are really good pain management solutions um (...) effectively if the patients are being pain managed I think yes they are. I think it's a very cost effective I think it's a very time effective because our nurses are going to narcotics presses all the time, try to get the medications also constant infusion [yes] ((swallow)) for the patient. So I do think they are effective um there are little complications that we have seen with them of course every nurses need to be trained intensively um with you, with the pain team, um for these kind of patients. So

once they are trained properly other use to, to the::: the policies and the procedures for this, I think I can be very good thing.

I: Yes. So you mentioned that they do experience nausea and vomiting, what other adverse effects-?

R12: [Yuh they do, they experience they, they do they, they can become constipated with these kind of medications as well, um itchiness like we said, um the nausea and the vomiting, um definitely they can experience with their also. Like you know the sedations score we have to watch these kinds of things also, [Yes] sometimes it could become bradycardic with it, we have our medications on hand, with those kind of things with the low sedation, and the bradycardia, um ((swallow)) uh those could be side effects from these kinds of medications also.

I: Can you explain for me, to me what you mean by sedations score?

R12: Um basically we can see the drowsiness of the patient with those kind of medications, so we have a score like if it's three and above, um we would be initiating like a narcan if I'm right from three and above, I will follow the policy on that one, we will be initiating that a Narcan, um Naloxone regime, um so maybe the patient is too sedated while they get this medication, um so again we're observing them all the time um as per policy that we have for this one.

I: Yes. So with uh PCA, which medication do you normally use for PCA?

R12: We use uh Morphine usually, [yes] we do it Hydromorphone, um and Tramal also [Yes] uh but usually what we see here is morphine or the hydromorphone and being used.

I: Patients receiving these medications, are they also experiencing some side effects?

R12: Yes they do, yuh they do, they uh can experience the itchiness as well, pruritus um they do that kind of a common one actually I from my experience that they would, [Yes] um but again usually these patients have the proper um medications prescribed like Diphenhydramine, um the anti-histamine drugs that they need for these symptoms and usually control those symptoms quite effectively. [Yes] Um the acute pain service doctor and nurse will review the patient once to two times per shift, so again these symptoms are monitored quite closely.

I: Yes. You mentioned acute pain service doctors, what actually what are their roles these doctors?

R12: Um they are involved in episodes in the patients that are receiving PCA and analgesia, their also the role of their if the doctor will consult them and their team if any difficult patients that are difficult to manage, [Yes] and so they do consultation to the APS team um maybe for patients in what, what manage effectively. Um the pain nurse from the team is also involved with difficult patients that were not managing very well let's say on the ward also. So patients that were given analgesia to um where calling back and we are not getting a good relief from this [Yes] and over I'm not cannot good relief from non-pharmacological interventions, ((swallow)) so we can this team also. (hhh) The doctor will review and implement measures to effectively manage the patient's pain, [Okay] holistically yuh.

I: So do the pain nurses from your experience help in [Yes] pain management [yes] post-operatively? [Yes].

R12: Um yes there, there is a backup and use them quite regularly for resources [Yes] and for guidance [okay] and I find that they're very approachable because if I do have a difficult patient there, we have somebody in it on the ward I will told them first then may say let's do a referral to the team to the doctor and lets get them involved. They'll also come and give us guidance with documentation and care plans, what kind of nursing plans what kind of a nursing care plans we can put into [yes] operation. [Yes] So I think they are definitely effective, [Effective]I think they need to be more pain nurses, because I think there should be a pain nurse on every ward.

I: On every ward. Oh ((laughter)) was going to ask you what is your suggestion [mhm] to improve pain management of post-operative pain?

R12: Yuh , um I think um maybe the patient ratio from post-operative patients could be a lot less if we had like a high dependency, um be on the ward let's say four beds for epidural patients. [Yes] lets like one nurse two patients, we, we do have that for fresh epidurals, let us keep it twenty-four to fourty hours post-op and really focus on our patients.[Yes] Um I also think that the pain nurse attached to our ward and will be amazing she can do education reinforcement, auditing, monitoring,[yes] um and I think that would really help because it's not like anywhere else in the world that I have worked, we have such a turnover of staff. [Yes] That in regards to educational staff, we have the massive language barrier [language barrier] ((swallow)) um so I think the pain nurse on every ward um or, or like even the pain nurse every two wardswill benefit patients immensely. [Yes]

I: So, language barrier, how does it affect uh post-operative pain management with your patients?

R12: Um I think it does, because um we have uh I know I have done the study

myself about “eighty percent of communication is non-verbal [Yes]so we, we have our scale the months, we have it as Saudi Arabic speaking educator which is excellent, okay.[Yes] So she will educate them but then, everybody else is Arabic from the nurses point of view that will assesses, screen pain, it’s difficult so again the, the discrepancies that may come from these, the discrepancies with pain scoring maybe the language problem, um but then again we take pain whatever the patient say it is, so we need to manage it effectively [Yes] Um I think definitely it has to be an issue, with regards to nursing and uh patients um information on what’s going on in relation to pain management.

I: Yes. From your observation do you think the nurses they believe what the patient says about their pain?

R12: Not always, [Yes] No, they, they have a bit of the thing about that I think some nurses they will go in and then say, oh my God look at them, like know he’s, he’s telling me he’s in pain but obviously not in pain, and they have I think some nurses, but again just needs to be reinforced they need re-educated. Um with the post-operative hip pains, I think there were they very well educated, [yes] that will have pain so their not very um judgmental [yes] can’t say. Um so we need to know that pain is whatever the patient say it is. [say it is] But I think, I think there is definitely some, some of those um people out there. ((laughter))

I: Do you have anything to add from what you said?

R12: I don’t think so.

I: You don’t think so.

R12: No.

I: Thank you very much even me I have no question now.

R12: Okay.

I: And thank you very much [Your welcome] in participating in the study  
((laughter)) thank you.

END OF INTERVIEW

**ANNEXURE 3.2****Tabulation summary of themes, categories and subcategories****Theme 1: Surgical nurses' descriptions of post-operative pain**

<b>Theme</b>	<b>Category</b>	<b>Subcategory</b>
<b>Theme 1: Surgical nurses' descriptions of post-operative pain</b>	Subjective experience	• Patient's report of pain
		• Patient's expression of pain
	Duration of pain	• Immediately after surgery
		• Few days after surgery
	Location of pain	• Hip surgery site
		• Knee surgery site
	Severity of pain	• Free from pain to mild pain
		• Mild pain to moderate pain
		• Moderate to severe pain

**Theme 2: Assessment of pain in patients after THR and TKR surgery**

<b>Theme</b>	<b>Category</b>	<b>Subcategory</b>
<b>Theme 2: Assessment of pain in patients after THR and TKR surgery</b>	Subjective assessment of pain	• Patient's self-report of pain
	Observations of behavioural responses to pain	• Facial expressions
		• Vocalizations
		• Actions that could imply pain
		• Use of FLACC scale for non-verbal patients
	Observations of physiological responses to pain	• Elevated blood pressure
		• Increased heart rate
• Increased respiratory rate		

**Theme 3: Management of post-operative pain after THR and TKR surgery**

Theme	Category	Subcategory
<b>Theme 3: Management of post-operative pain after THR and TKR surgery</b>	Pain relief interventions	• Non-pharmacological interventions
		• Pharmacological interventions
	Nurses' role to enhance pain relief interventions	• Maintaining goal for pain relief
		• Reassessment of pain
		• Collaboration amongst multidisciplinary teams
		• Monitoring adverse or side effects of analgesia
		• Management of adverse or side effects of analgesia

**Theme 4: Patient education and the involvement of loved ones in pain management**

Themes	Category	Subcategory	
<b>Theme 4:Patient education and the involvement of loved ones in pain management</b>	Pain education	• Education regarding: <ul style="list-style-type: none"> <li>• Pain assessment tools</li> <li>• Patients' report of pain</li> <li>• Patients rights' about pain management</li> <li>• Available options for pain management</li> <li>• Side effects of analgesia</li> </ul>	
		• Provision of pamphlets	
		Involvement of family members	• Education for family members

### **ANNEXURE 3.3**

#### **Example of memo writing**

##### **Reflective Notes**

**Transcript code:**12

**Date:**01/07/2014

**Audio Recorder Code Number:**140701\_0022.MP3

**Duration:** 25 min 10 sec

##### **Key:**

I = Interviewer

R12= Respondent no 12

##### **Introduction**

##### **Biographical data**

##### **Central question answered:**

- APS team role
- Advanced pain management
- Collaborative pain management
- Pain assessment
- Nursing care
- Pre-op education
- Description of Post-operative pain
- Patient participation/pain education
- Pain screening
- Pain tools used=Wong Baker,FLACC
- Intensity of pain

- Location of pain
- Duration of pain
- Comprehensive pain assessment
- Nursing care guidelines
- Collaboration amongst other teams
- Non-pharmacological interventions
- Severe pain level
- Pain score (7-10) severe pain
- Severity of pain experienced/severe pain level
- Experience mild pain
- Complications/effects related to unrelieved pain/DVT, PE, chest infection, pneumonia
- Collaborate with physiotherapists
- Goal for pain relief=below 4/10 Pain management measurable goal
- Collaborative pain management
- Mild pain level
- Involve pain nurse/pain team
- Self-report of pain
- Response to pain
- Pain Nursing care interventions
- Non-pharmacological interventions
- Patient participation-pain education
- Tramadol
- Pain relief evaluation/pain reassessment
- Follow pain management nursing policies
- Pain relief evaluations/
- Reassessment
- Pain management discharge guidelines
- Moderate pain level

- Patient pain education
- Pharmacist
- Patient participation/patient teaching
- Involving the patient
- Pain education
- Pain policy
- Pain assessment
- Role patient to play
- Staff education about pain management
- Collaborative pain management/doctors
- Collaboration
- Local anaesthetic drugs used
- Ropivacaine
- Side effects of analgesia
- Hypotension
- Side effects of analgesia/nausea
- Vomiting
- Itchiness
- Over sedated
- Bradycardia
- Side effects of analgesia
- Drowsiness
- Reversal drugs for adverse effects/Naloxone
- Use of opioids/morphine
- Hydromorphone
- Tramal
- Reversal drugs for adverse effects
- Diphenhydramine
- Pain relief interventions/PCA

- Suggestion made
- Problem identified/
  - Language barrier
- Pain expression and self-report
- Language barrier/Arabic speakers
- Issue
- Pain education

## ANNEXURE 4

## Permission from IRB ethics committee

Health Affairs Executive Office Kingdom of Saudi Arabia National Guard Health Affairs	File # 11317/2013		المملكة العربية السعودية الحرس الوطني - الشؤون الصحية
Institutional Review Board	14572	1515	14571
<b>MEMORANDUM</b> Ref. #: IRBC/290/13			

Date: (G) 04 November 2013  
(H) 01 Muharram 1435

To: **MR. KOLOBE LITABA EFRAIM**  
Principal Investigator – SP13/012  
Clinical Resource Nurse, Pain Management  
Nursing Researcher/MA NSc Student  
University of South Africa  
Africa

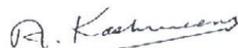
Subject: **PROTOCOL SP13/012 : "Perceptions of Surgical Nurses Regarding the Post-Operative Pain Management of Patients after Total Hip or Knee Replacement Surgery"**

This is in reference to your subject proposal, which has been reviewed by the IRB Office on the 29<sup>th</sup> of October 2013 through the expedited review process. Upon recommendation of the Research Committee, and following the review of the IRB on the ethical aspects of the proposal, you are granted permission to conduct your study.

Your research proposal is **approved for one year** commencing from the above date with the following conditions:

## TERMS OF APPROVAL:

- Annual Reports:** Continued approval of this project is dependent on the submission of a Annual Report. Please provide KAIMRC with an Annual Report **determined by the date of your letter of approval.**
- Amendments to the approved project:** Changes to any aspect of the project require the submission of a Request for Amendment to KAIMRC and must not begin without an approval from KAIMRC. Substantial variations may require a new application.
- Future correspondence:** Please quote the project number and project title above in any further correspondence.
- Monitoring:** Projects may be subject to an audit or any other form of monitoring by KAIMRC at any time.
- Retention and storage of data:** The PI is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



**Prof. Amin Kashmeery**  
Chairman, Institutional Review Board (IRB)  
National Guard Health Affairs

 04 NOV 2013

**Dr. Ahmed Al Askar**  
Executive Director, KAIMRC  
National Guard Health Affairs

  
**Dr. Bandar Al Knawy**  
Chief Executive Officer  
National Guard Health Affairs

AK/AS/mda

## **ANNEXURE 5**

### **Storage and management of data collected**

1. To protect identity by giving each subject a code number to anonymise the data.
2. Master list of the subjects' names and personal information will be kept under lock and key.
3. Only the researcher for the study will be the person with access to the data/information generated by the study.
4. The copies of the research methods, recorded data, transcribed data and coded data and the reports will be kept locked in safe place for a period of 3 years.



## **ANNEXURE 7**

### **Participant information letter**

My name is Kolobe Litaba Efraim; I'm currently undertaking a Master's Degree in Nursing Science at University of South Africa.

I'm inviting you to participate in this study.

Title of the research project: Surgical nurses' perception regarding post-operative pain management of patients after total hip or knee replacement surgery.

#### Descriptions of the Research Project:

The proposed study aims to describe the perceptions of surgical nurses regarding post-operative pain and pain management of patients who have undergone total hip or knee replacement surgery. I hope the proposed study will help us to understand post-operative pain and pain management and to identify areas of improvement or to enhance quality patient care.

The participant will not incur any financial expenses related to the study. There are no allowances or payments to be offered to participate in this study.

You have been selected because you meet the following inclusion criteria:

- You are a registered nurse working in orthopaedic ward at King Abdulaziz Medical City in Riyadh, KSA with minimum of 1 year.

Participants will be individually interviewed in a quiet room using audio-recorder and this may take at least 45 minutes. All information will be confidential and no identifiable data will be included in the study. The researcher may return to you if needed to confirm the information obtained. All data from the interview will be managed and stored in safe place and will follow the King Abdulaziz Medical City in Riyadh, KSA Research and Ethics data compliance guidelines.

If you would like to participate in the proposed study you will be required to sign the informed consent document. Participants will be required to give permission for the researcher to use the data for reporting of the findings, sharing research results or publication of an article in an accredited journal without revealing their identities.

If you choose to participate, but wish to withdraw at any time, you will be free to do so without negative consequence. However, I would be grateful for your participation in this study.

If you have any questions before making a decision on participation, please feel free to contact me.

Below is my contacts and my supervisors:

Contact Details:

Nurse Researcher	Research Supervisor	Research Co-Supervisor
Kolobe Litaba Efraim.  King Abdulaziz Medical City Hospital, Riyadh  Tel :2520088 ext 11142  Pager :3613  Student No:36640085  E-mail : <a href="mailto:kolobel@ngha.med.sa">kolobel@ngha.med.sa</a>  Mail code:1242	Prof .MJ Oosthuizen.  University of South Africa  E-mail: <a href="mailto:oosthmj@unisa.ac.za">oosthmj@unisa.ac.za</a>	

## ANNEXURE 8

### Letter of consent for participants

#### Informed Consent for participation in nursing research study.

**Study Title: Perceptions of surgical nurses regarding the post-operative pain management of patients after total hip or knee replacement surgery.**

Nurse Researcher	<b>Kolobe Litaba Efraim</b> Student No:36640085
Contact details:	
King Abdulaziz Medical City Hospital, Riyadh Tel :2520088 ext 11142      Mail code:1242 Pager :3613 E-mail : <a href="mailto:kolobel@ngha.med.sa">kolobel@ngha.med.sa</a>	

#### **Please read this and if you agree then sign.**

I, *(please print name)*, \_\_\_\_\_ have read and understand the letter of invitation, and therefore I give my consent to take part in the research study.

I have received adequate information regarding the nature of the study and understand what will be requested of me. I am aware of my right to withdraw at any point during the study without penalty.

I give permission for the researcher to use the data for reporting of the findings, sharing research results or publication of an article in an accredited journal without revealing my identity.

I hereby agree to participate in this research study and I understand that I will receive a copy of the signed form.

Name: <i>(please print)</i>	
Signature :	
Date:	

ANNEXURE 9

Letters to Nurse Managers for invitations of participants



King Abdulaziz Medical City in Riyadh  
National Guard Health Affairs  
Kingdom of Saudi Arabia  
Nursing Services



Annexure 9

Date: G 13 May 2014
H 14 Rajab 1435

To : Nurse Managers *DADJW 62951*  
(In- Ward 36, 38, 39 and 40)

Thru : Ms. Joan Murray *[Signature]* 21 MAY 2014  
Associate Executive Director, Nursing Services, CR

Ms. Nabeeha Tashkandi *N. Tashkandi*  
Director Clinical Nursing, Surgical Care Services & Business Center

Mr. Rob Hemmelder *[Signature]*  
Director Clinical Nursing, Operations, Nursing Administration

From : Litaba Efraim Kolobe, BN # 47295 *[Signature]*  
Clinical Resource Nurse, Pain Management  
Nursing Researcher/MA NSc Student, University of South Africa, South Africa

Subject : Request of names of Registered Nurses working in orthopaedic wards at King Abdulaziz Medical City in Riyadh

Study Title : Perceptions of Surgical Nurses Regarding the Post-operative Pain Management of Patients after Total Hip or Knee Replacement Surgery



My research study is at the stage of data collection. The results of the proposed study will help us to understand post-operative pain and pain management and to identify areas of improvement or to enhance quality patient care. I therefore ask your help to make contact in order to obtain the names of the surgical nurses that are willing to participate in the study.

The surgical nurses interested will be required to meet the following inclusion/eligibility criteria:- Registered surgical nurses both male and female employed and working in orthopaedic wards must have at least 1 year experience at King Abdulaziz Medical City hospital in Riyadh, Kingdom of Saudi Arabia, willing to participate in the study and to give consent. Prepared to use English language during interview. Information letter will be provided to volunteered participants.

Kind regards.

Nurse Researcher	Kolobe Litaba Efraim Student No:36640085
Contact details	
King Abdulaziz Medical City Hospital, Riyadh	
Tel :2520088 ext 11142 Mail code:1242	
Pager :3613 E-mail : <a href="mailto:kolobel@ngha.med.sa">kolobel@ngha.med.sa</a>	

*[Signature]* 54269  
*[Signature]* 65805