

# Nurses' role in patient guidance for post-operative pain management in the orthopedic patients

A Narrative Literature Review

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ABSTRACT

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Pain is a multilevel phenomenon that incorporates physiological and psychosocial aspects. Post-operative pain is still undermanaged despite various interventions, tools and methods of pain management continue to develop. Effective pain management is vital in the post-operative period to make sure that patients do not suffer or experience any form of distress or result in other post-operative pain related complications.

The aim of this literature review was to find out how patient guiding plays a role in the post operative pain management in the orthopedic patient. In addition, the aim was to understand how the attitudes of nurses and patients affect the management of post-operative pain.

This narrative literature review was based on 23 scientific articles. The databases used for data collection were Cochrane, PubMed and EBSCO. The inductive content analysis was used as an analysis tool for this literature review after critical appraisal of the articles to ensure the compatibility of the articles to the topic.

Findings from this literature review showed the role of the nurse in post operative pain management through patient guidance, the interventions that the nurses have used to manage post operative pain especially the non-pharmacological pain. In addition, the attitudes that both nurses and patients have that affect pain management as well as the importance of communication in the management of post operative pain. Patients will

experience less pain if they know what to expect when they are better prepared to manage one's pain. This could be one area for further research.

Keywords: post-operative pain, pain management, orthopaedic patients, nursing intervention, patient education

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Kipu on moniselitteinen ilmiö, joka sisältää fyysisiä ja psykososiaalisia puolia. Postoperatiivista kipua ei pystytä vielä täysin hallitsemaan, vaikka kivunhoitoon on kehitetty lukuisia interventioita, menetelmiä ja työkaluja. Tehokas kivunhoito on tärkeää postoperatiivisessa vaiheessa sen varmistamiseksi, että potilaat eivät kärsisi sen vuoksi ahdistusta ja ettei syntyisi muita postoperatiivisen kivun aiheuttamia komplikaatioita.

Kirjallisuuskatsauksen tavoitteena oli tutkia, millä tavalla potilaan ohjausta voidaan käyttää ortopedisen potilaan leikkauksen jälkeisessä kivunhoidossa. Lisäksi pyrittiin selvittämään, miten sairaanhoitajien ja potilaiden asenteet vaikuttavat postoperatiiviseen kivunhoitoon.

Tämän narratiivisen kirjallisuuskatsauksessa aineistona on 23 tieteellistä artikkelia. Tietoa etsittiin seuraavista tietokannoista: COCHRANE, PUBMED ja EBSCO. Valittujen artikkelien laadukkuus varmistettiin huolellisella ennakoarvioinnilla. Aineisto analysoitiin induktiivisella sisällönanalyysillä.

Tutkimuksen tuloksena muodostettiin kuvaus sairaanhoitajan roolista postoperatiivisessa kivunhoidossa potilaan ohjauksessa, sekä erityisestikäytetyistä lääkkeettömistä kivunhoitomenetelmistä. huomionarvoisina seikkoina nousivat myös esiin sairaanhoitajien ja potilaiden asenteet kivunlievitystä kohtaan sekä postoperatiiviseen kivunhoitoon liittyvä kommunikaatio. jos potilas tietää

mitä odottaa, niin hän on paremmin valmistautunut omasta kivustaan selviämiseen. kivunhoitoonliittyvä kommunikaatio voisi olla tulevaisuudessa jatkotutkimuksen aihe.

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Asiasanat: postoperatiivinen kipu, kivunhoito, ortopediset potilaat, hoitotyössä käytettävät interventiot, potilaan ohjaus

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## 1 INTRODUCTION

Pain is a multilevel phenomenon that incorporates physiological and psychosocial aspects (Carpenter, Hines et al. 2017). Pain is an undesirable sensation and emotional experience that correlates with definite or probable damage in contrast to the possibility of the related structured damage. Orthopedic pain can be intense due to the nature of the surgical procedure (Carpenter, Hines et al. 2017)

When pain is poorly assessed and managed there are physiological effects that occur on the patient that results to post-operative complications like delayed discharge, increase in heart rate as well as blood pressure, poor gastric excretion that causes nausea, vomiting, paralytic ileus as well as an increase in adrenaline production due to the vast changes in the endocrine system (Guardini, Talamini et al. 2008).

According to research done by King (2004) nurses believe that they have limited understanding of pharmacology which in turn causes dissatisfaction with their academic skills. Lack of knowledge of the nurses' lecturers, insufficient education on pain management and misleading information from textbooks are considered as obstacles for improving pain elevation in patients (Wallace et al, 1995).

It is very common for patients not to report pain or delay to report until it has reached a severe level because they believe that healthcare staff are 'too busy', have more important or seriously ill patients to look after, or because they do not want to cause trouble (Gray 2005, Mackintosh 2005).

Post-operative pain management is very important as this literature reveals including the long-term effects of pain on an individual. Nurses should not only be constantly striving to learn new information, update old knowledge as well as find guidelines that are constantly updating on pain and management techniques and tools but also work on becoming individuals that also seek better understanding of what they are dealing with (Mackintosh, 2005).

## 2 POSTOPERATIVE PAIN IN THE OPERATIVE PATIENT

This chapter discusses pain and post-operative pain and its effects, the attitudes towards pain, the nurses' perspective towards post-operative pain and the general methods of pain management in conjunction with education.

Pain is a multilevel phenomenon that incorporates physiological and psychosocial aspects (Carpenter, Hines et al. 2017). Pain is an undesirable sensation and emotional experience that correlates with definite or probable damage in contrast to the possibility of the related structured damage. Orthopedic pain can be intense due to the nature of the surgical procedure (Carpenter, Hines et al. 2017)

The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage” it is also considered personal and unique to each individual and the care providers (Manias et al, 2005).

Acute and chronic pain are the most familiar types of pain, with acute lasting for a brief period of time e.g. less than 6 months and with less complications, chronic pain on the other hand extends to a period over six months and has complications like delayed hospital stays, unemployment, social shyness among other complications (Shaw, 2006). Büyükyılmaz (2014) adds on that the pain intensity is felt much stronger between moderate to severe especially when walking.

When pain is poorly assessed and managed there are physiological effects that occur on the patient that results on post-operative complications like delayed discharge, increase in heart rate as well as blood pressure, poor gastric excretion that causes nausea, vomiting, paralytic ileus as well as increase in adrenaline production due to the vast changes in the endocrine system (Guardini, Talamini et al. 2008) post-operative pain is frequently undermanaged causing unnecessary patient



discomfort, deterioration of quality of life, it also causes institutional effects like hospital readmission and also increased length of stay (Hutchison, 2007).

According to Guardini et al (2008) there are three main reasons why pain is undermanaged among or in postoperative care although pain is expected after surgery; there is insufficient knowledge from nurses about pain management, the attitudes of nurses towards pain and lastly failure of nurses to assess pain daily.

Effects of poorly controlled pain results in mobilization delay, complications in deep vein thrombosis and pulmonary embolus as well as breathing effects that causes poor coughing to the development of chest infections (Sjöström et al, 2000). According to Macintyre et al (2002), there are other physical complications like changes in pituitary-adrenal activation which causes diminished responses to the immune system, psychological changes like stress, depression and anxiety (Hutchison, 2007). These are the challenges that are as a result of undermanaged pain in addition to arthrofibrosis and reduction in the range of motion (Maheshwari, Blum et al. 2009).

McCaffrey (1972) quotes in a research 'Pain is whatever the experiencing person says it is, existing whenever he/she says it does.' therefore, patients have to be trusted when they report their pain scores as they understand it and they have a compassionate right to be pain-free as stated.

According to Mackintosh (2007) pain management is unattainable if the assessment process is poorly done because, this results into uncertainty of the pain therefore the right tools are not used to their potency. Pain assessment is the foundation of effective pain management and that, nurses are the pillars in the Pain management process (Mann et al 2006).

## 2.1 Nurses perspective on post-operative pain management

Hung et al (2001) found out from his study, that patients refused to take analgesia because of a belief that analgesia causes addiction Manias et al (2002) adds that some patients pointed out that some of the side effects of some of the injections were worse than the pain.

The attitude of most nurses was that they had difficulty in believing that patients were in pain, the common myths about the perception of pain, when pain assessment needs to be done and the commonness of patients to get addicted through the administration of opioids (McNamara, Harmon et al. 2012)

Nurses have difficulty in translating down pain as communicated by patients, this is because of the experience of pain to each individual, language barrier or the difference in languages used, the difference in the understanding of pain and also the difference in communication between the patient and the nurse, according to a research done, pain can also be difficult to describe due to its subjective nature (Turk and Melzack, 2001).

According to research done by King (2004) nurses believe that they have limited understanding of pharmacology which in turn causes dissatisfaction with their academic skills. Lack of knowledge of the nurses' lecturers, insufficient education on pain management and misleading information from textbooks are considered as obstacles for improving pain elevation in patients (Wallace et al, 1995).

According to the study conducted by McNamara et al (2012) the attitude of most nurses was that they had a difficult time believing that patients were in pain, common myths about the perception of pain, when to assess pain as well as the prevalence of addiction to patients being given opioids.

Some research also found out that patients refused to take analgesia for the belief that they would get addicted as well as some patients identified some of the side-effects of some injections and tablets were worse than

the pain (Huang et al 2001; Manias et al 2002; Bédard et al 2006; Klopper et al 2006).

The main reason why some nurses underestimate pain assessment is unclear, however Mathews et al (2007) believes it to be due to trying to deal with personal stress or due to the fear of unsuccessfully managing a patient's pain as Hayes et al (2002) states.

Everett et al (1994) found out that time insufficiency, workload increase, and lack of enough staff were noted as the main factors that lead to insufficiency in pain management in clinical practice.

Pain scores received by nurses could be affected by the patients' 'education level, cultural background as well as religious beliefs'. Currently, the pain scores that nurses give can only describe about 22.7% of the pain experienced by patients while the relatives of the patients are able to give about 52% pain estimation of the patient rendering them more successful (Green et al. 2003).

It is proven that the public has little knowledge on the nature of post-operative pain, the public has high expectations on the nurses and the healthcare professionals' ability to treat them (Scott et al. 1997).

## 2.2 Patients' perspective on post-operative pain management

According to Mackintosh (2007) patients mostly describe pain in words like throbbing, stabbing or shooting and while walking, the pain intensity felt by the patients increased between moderate to severe (Büyükyılmaz, 2014).

A good number of patients, according to a study conducted by Manias et al (2006) are passive in their pain relief because they prefer that nurses asks them about their pain level before they are administered with any analgesia. Another observation made by Manias et al (2006) on a study confirmed that if the pain is continuously felt there is increased level of fear and anxiety consequently causing poor management of pain. Some

patients as suggested by a nurse in a study conducted by Manias et al (2006), passivity was increased also in that patients didn't want to feel like they are bothering the nurses.

It is very common for patients not to report pain or delay to report until it has reached a severe level because they believe that healthcare staff are 'too busy', have more important or seriously ill patients to look after, or because they do not want to cause trouble (Gray 2005, Mackintosh 2005).

According to Sloman et al (2005) cultural factors influence the patient's perceptions of pain. A South African analysis done by Klopper et al (2006), showed that patients from different cultural background seemed to have different experiences in pain for example black patients had higher pain resilience than Indian or white patients while in Chung and Lui (2003) compares that Chinese and western patients were reluctant to show that they were in pain so as to seem good patients.

Phillips (2004) explains that patients subjected to elective surgery tend to undergo fear and anxiety because they have no idea of what to expect, therefore pre-operative education is important as it gives them knowledge of the probable surgery and it also allows a better relationship between the patient and the nurse before the patient is transported to the operating theatre (Chetty & Ehiers 2009).

### 2.3 Attitudes towards post-operative pain management

Bédard et al (2006) showed that fears concerning side effects of perioperative medications remained, even though evidence-based drug orders and documentation of pain scores were carried out.

Some research also found out that patients refused to take analgesia for the belief that they would get addicted while some other patients identified that some of the side-effects of some injections and tablets were worse than the post-operative pain itself (Huang et al 2001; Manias et al 2002; Bédard et al 2006; Klopper et al 2006).

According to a study done by Glowacki (2015) the major obstacles in attaining effective pain control is the lack of skills and steady pain assessment, and the most recognized obstacles are perceptions of the patients, personal, individual and confidential experiences of pain management extent.

Nurses have a subconscious barrier as Schafheutle et al (2001) concludes, when it comes to pain management which are the personal perceptions that nurses make about pain experienced by patients which is 'the persistent negative attitudes' to pain management by the nurses (Manias et al. 2002)

According to Maheshwari et al (2009) patients about to undergo surgery have unrealistic post-operative expectations of recovery, pain and function itself, which might lead to dissatisfactions after a surgery.

Up to date, there is need for more information resources to educate the patients and their families about information before and after hospital discharge as this information is very vital, this is because there is an increasing number of surgeries, as well as the brief hospital stays as to which the patients need this kind of information throughout the shared decision-making process between the nurse and the patient (Kennedy, Wainwright et al. 2017)

#### 2.4 Pain guidance on alternative therapies and non-pharmacological methods of post-operative pain management

The use of pharmacological methods of pain relief was first developed for palliative care as highlighted in a research done by Mackintosh (2005). There are two types of post-operative pain management, mainly, the pharmacological methods which is the use of medications and the non-pharmacological (comfort) methods that include also the use of alternative and technological therapies and multimodal techniques (Mackintosh, 2005).

If both pharmacological and non-pharmacological methods are used appropriately in the management of post-operative pain, excellent and effective results will be produced. However, there is a tendency for healthcare facilities to only focus more on the pharmacological methods to manage post-operative pain than the non-pharmacological methods because they consume a lot of time (Mackintosh, 2005).

Physical exercises like stretching, balancing towel dancing, strengthening or conditioning of the body and massage have proven to be effective in pain relief and early mobility. Büyükyılmaz (2014) adds that using about 30 minutes of alternative therapies for pain management; coaching, self-management and pain management programmes like the cold or hot treatment physical exercise as well as methods of relaxations helped reduce pain drastically especially in the chronic pain potency and enhanced self-efficacy as well as the general quality of life during the first 1-4 months of recuperation.

For alternative therapies like heat and relaxation treatments rather than medications could be very effective in managing pain, however, due to scarcity in nursing practice or education on non-pharmacological therapies, nursing shortages and excessive workloads, the use of alternative treatment is limited (Guardini, Talamini et al. 2008).

The use of physical touch and music could provide significant pain relief in the clinical industry. Rognstad et al (2012) shows in a study that about 40% of nurses didn't feel very competent when it came to manage the patients' overall pain experience (Cepeda et al, 2006: So et al ,2008: Rognstad, Fredheim et al, 2012).

Endorphins as a concept by itself should be analyzed and discussed together with the patient during the pre-operative phase, because, the multi-professionalism between the nurses, anestheologists and pain management team is of greatest importance for the overall quality of patient recuperation (Sugai et al. 2013) as this encourages active participation and motivation with the patients.

The assessment of pain on a patient is highly dependent on the level of education that a healthcare professional requires in order to be able to recognize a patient's perception of pain, previous experiences with pain, up to date pain knowledge, spiritual and religious beliefs as well as sociocultural elements (Glowacki, 2015).

### 3 AIM AND PURPOSE OF THE LITERATURE REVIEW AND THE RESEARCH QUESTION

#### 3.1 Aims

The aim of this literature review is to find out how patient guiding plays a role in the post-operative pain management.

#### 3.2 Purpose

The purpose of this literature review is to examine the interventions of nurses on post-operative pain management through patient guiding and to also understand how the attitudes of nurses and patients affect the management of post-operative pain.

#### 3.3 Research questions

- i. What role does the nurse play in the post-operative pain management in the orthopedic patient?
- ii. What interventions have nurses used in the management of post-operative pain through patient guiding?



## 4 METHODOLOGY

### 4.1 Literature review

A narrative literature review was used in this thesis. A narrative literature review (also known as descriptive or traditional review), which summarizes, synthesises and discusses all the sources into one topic. The aim of this type of review is to give an extensive overview of the literature chosen to suit the topic of research, identify the gaps that exist in research and to develop a conceptual framework which, refines the research topic or question (Cronin et al. 2008,38). Findings of the research questions was achieved by gathering all the scientific research publications and studies from previous research. According to Aveyard (2014) a literature review can be described as the analysis of literature conducted from one specific topic and then combining all the findings from the literatures into one specific topic.

Narrative literature review seeks to provide a general view in a vast range of issues confined in a research topic or question, it is elucidatory in that it aims to collect data that highlights patterns that link between variables and relationships for example, the association between communication style and patient's pain management knowledge (Moule & Goodman 2009, 13.) A narrative literature review includes a summary and critical analysis and doesn't have any specific analysis method (Moule & Goodman 2009, 146-147)

Literature review which is also known as a general review focuses on a wider range of study analysis that is not strictly bounded or ruled. The material of study is extensive and since the main objective is reviewing the theory on a larger scale as compared to systematic reviews (Salminen. 2011.3). Literature review offers more abstract results and generalized information as compared to other research methods. Throughout the literature review the author focuses on summarizing the literature, the critical evaluation and synthesis of data.

Firstly, the articles were gathered according to the framework, methodology, selection of samples, content, relevance of the literature to the topic and the results. Secondly, critical appraisal is used as it is one of the important steps in the assessment as well as analysis of the literature obtained and creating the evidence-based data found in order to seek out target questions like are the concepts in the literature well defined? Does the theoretical framework in the research provide the results and findings of the research? What are the criteria for choosing the sample size, type of study, participants of the research as well as the type of study? Then finally, the synthesis of the articles, in which, is the finding out the research questions highlighted and reveal how the found articles are linked together with the authors own work as well as what the author concludes (Moule & Goodman, 2014, 120).

In this thesis 23 articles have been reviewed, analyzed and summarized. In subchapter 4.2 the search and collection of data discussed. Firstly, the author discusses the main concepts of collection like framework of the literature, the methodology used, sample selection and main results. The results are arranged (appendix 2) according to the title of the article, year of publication, purpose of the study, data collection method and lastly the main findings. This is to give a general view of the process that the author undertook in the completion of this final thesis.

Secondly, the articles are analyzed in subchapter 4.4 in which the author mainly focuses on finding the answers to the target questions; What role does the nurse play in the post-operative pain management in the orthopedic patient? And, what interventions can a nurse use in the management of post-operative pain through patient education? The study uses an inductive content analyses. And finally, the articles are summarised after careful synthesis in the findings subchapter.

The findings are then discussed with research from other literature with the aim of comparing the findings from this thesis and other literature within

the same scope of topic and lastly the thesis is concluded in subchapter 6.5 which is the final conclusion of the overall chapter thesis.

#### 4.2 Database search and collection

According to Moule and Goodman (2009, 146-147) a narrative review employs a qualitative research approach, but, does not answer specific quantitative questions. A narrative review will discuss finding, remark on methods used and apogee on the weaknesses and strengths but not make a list of databases or methodological approach used in research conduction or discuss knowledge used on inclusion or exclusion of search criteria on research articles (Moule & Goodman, 2009).

In this final thesis a narrative literature review is used and EBSCO, COCHRANE and PUBMED were the databases used to collect the relevant articles that are suitable to this thesis using the following search criteria;

- I. Articles published in English or Finnish
- II. Articles available in full text
- III. Articles that focused on adult patients
- IV. Articles that answered the research question
- V. Articles that were evidence-based
- VI. Articles that were either systematic reviews, qualitative or quantitative

The databases used for this thesis were EBSCO, COCHRANE and PUBMED. The keywords used were post-operative pain, pain management, orthopaedic patients, nursing intervention, and patient education. The author decided to search without post-operative with a hyphen, and instead used post-operative without a hyphen which produced the amount of results used in this thesis. The total number of final articles are listed in table 1 (see appendix 1).

The literature search was carried out starting from 22<sup>nd</sup> May 2017 by using the keywords post-operative pain AND pain management AND orthopaedic patients AND patient education in which appeared 62 articles with the limitations of English language and free full text and 9 of them were used in this thesis.

COCHRANE was also used on the 22<sup>nd</sup> May 2017 in which the keywords were post-operative pain AND orthopedic patients AND nursing interventions AND patient education and 32 hits were found of which 6 articles were used for this thesis.

Another research was conducted on PUBMED on the 10<sup>th</sup> June 2017. The keywords were post-operative pain AND pain management AND pain education AND orthopaedic patients AND nursing interventions. The results yielded 257 hints, using free full text search selection and English language articles, 6 of the articles were found suitable for this final thesis. Manual search came up with 2 articles. The total number of articles used in this research were 23 and categorized in order to obtain an overall view of the data process see (appendix 2).

Table 1: categorization of chosen articles

CATEGORIES	DATABASE	KEYWORDS	NO OF ARTICLES
Articles answering Question 1	EBSCO	"Nursing interventions" AND "postoperative pain" AND "pain management"	4
	COCHRANE		
	PUBMED		4
Articles answering Question 2	EBSCO	"Pain management" AND "post-operative pain" AND "orthopedic patients"	1
	COCHRANE		2
	PUBMED		3
Articles answering Question 1 & 2	EBSCO	"Post-operative pain management" AND "orthopedic patients" AND "nursing"	5
	COCHRANE		
	PUBMED		4

		interventions" AND "patient education"	
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Throughout this data organization process, the categorization is through the number of articles answering the research questions. The table 1 above, represents three columns that alongside the keywords are articles that answer question 1, those that answer question 2 and another that represents articles that answered both questions.

### 4.3 Content analysis

In this literature review section, the author seeks to study the following question: What role does the nurse play in the post-operative pain management in the orthopedic patient and what interventions have been used by nurses in the management of post-operative pain through patient guiding?

The data analysis method chosen for this thesis was a qualitative content analysis, which means that the content of narrative data is analyzed in order to identify prominent themes and patterns among the themes as well as find out the core consistencies and meanings that emerge from the literature being analyzed (Polit & Beck 2008, 517; Patton 2002, 453).

In a qualitative content analysis, the aim is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is concepts or categories describing the phenomenon (Elo & Kyngäs 2008, 108). Content analysis typically applies either an inductive or deductive approach to analysis. An inductive analysis is a method, in which the data is explored without applying it to the pre-existing framework while the deductive approach is one where the theoretical interest of the researcher directs the analysis. (Patton 2002, 453.)

The approach into data analysis for this literature review was inductive, which is defined as a process of reasoning from specific observations to more general rules of the selected 23 articles (Polit & Beck 2008, 755). The inductive analysis process includes three main phases: preparation, organizing and reporting.

The first phase, preparation, begins by deciding the unit of analysis, that is, what to analyze (Elo & Kyngäs 2007, 109.) In health and social science research, themes within data are generally identified by using an inductive approach. In an inductive content analysis, analysis categories are formed from the data. The approach aims to summarize data into a brief format and to form clear links between the summary findings obtained from the data and the research objectives. (Thomas 2003, 2; Patton 2002, 453.)

This step consists of open coding, forming categories or themes and abstraction. Open coding refers to re-reading and making notes about the content. From these notes, categories can then be formed and grouped under headings. Researcher must then make decisions through interpretation, choosing which things to put in the same category.

The final step of organizing is abstraction, which means generating categories that connect with the research topic. These categories are named by using words that characterize the content. The next stage of the analysis was to form main categories from the existing subcategories. This was done by identifying relevant units. The results should be described in sufficient detail so that the readers can have a clear understanding of how the analysis was carried out, the strengths as well as the limitations (Elo & Kyngäs, 2007). The analysis process is represented in table 2 below.

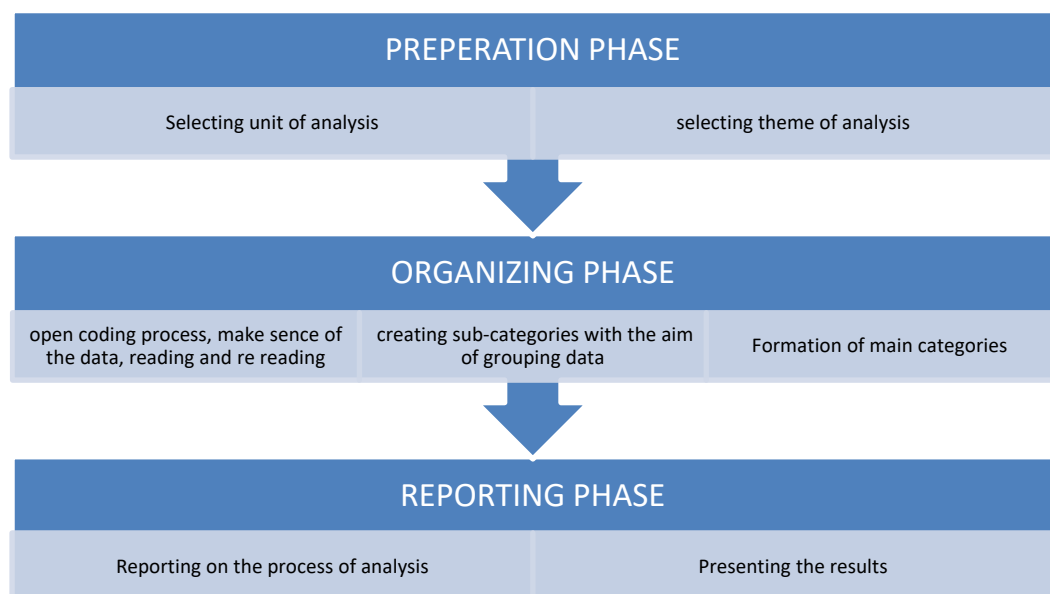


Table 2: Inductive content analysis process

The analysis process of this literature review begun by reading and re reading the articles in order to grasp the main ideas behind the target questions. After re reading the data was gathered into categories that listed same subcategories.

The next stage involved forming main categories from the subcategories by finding out the link between the subcategories and the findings (Elo & Kyngäs, 2007) this resulted in the formation and naming of the main categories. Finally, there were four main categories that aimed to answer the research questions of What role does the nurse play in the post-operative pain management in the orthopedic patient? and what interventions have been used by nurses in the management of post-operative pain through patient guiding? And the final stage aimed at reporting the findings of the results in more depth.

Table 3; research categories

<b>collection</b>	<b>Subcategories</b>	<b>Main categories</b>
<b>Non-pharmacological interventions</b>	Nursing interventions	Role of the nurse in post-operative pain management through patient guiding
<b>pharmacological interventions</b>		
<b>Combined</b>		
<b>Nursing goals</b>	Role of the nurse	
<b>Patient guidance</b>		
<b>Pain management strategies</b>		

<b>Attitudes, perceptions and</b>	communication	
<b>factors affecting pain</b>		



## 5 FINDINGS

### 5.1 Role of the nurse in the management of post-operative pain

Nurses should always assess pain before and after the administration of analgesia. Additionally, the effects of pain management should be measured in an empirical way by making use of pain scales and documenting the results in the patient's chart (Bell & Duffy, 2009)

Nurses must develop and continue to perpetuate pain assessment and management competency as it is unethical to let patients suffer with pain. Musclove et al (2002) suggests that in order for nurses to successfully assess and manage pain, they should examine pain assessment and pain management methods that work with a multicultural nation instead of carrying out a widespread research or rather looking at the bigger picture (Musclove et al, 2002).

Nurses should take into consideration that relatives spend the most time with the patients in the hospital room as well as post-operatively at home and therefore, it is of importance that the relatives are informed about the possible behaviours of pain that is potentially observed during the post-operative period as well as prepare them for effective patient care (Yıldırım, Çizmeciyan et al. 2015).

It is possible to reduce or eliminate the use of opioid analgesics if the patient is empowered by the nurses with the right education and conscious control methods (Sugai & Deptula et al. 2013).

It is imperative that the nurses encourage the patients to understand what types of guidance they need and what kind of method of information delivery works best with them as individuals when it comes to pain management (Kennedy, Wainwright et al. 2017).

Ingadottir et al. (2016) suggests that healthcare professionals should form strategies that focus on supporting the patients by finding reliable as well

as information that is easily accessible and easier to use from the media to teach the patients about self-care especially when they are being discharged from the hospital.

Nurses should be aware of the actors that affect the patient's learning ability like trust, motivation or inspiration when they are at a viable state during the post-operative phase, this is when nurses are about to guide the patients on the applications of new techniques, this will happen freely and easily when the patients are supported and assured by the nurses (Ingadottir et al. 2016).

Nurses should work on interventions that enhance the patient's attitude and perception of pain because, whatever a patient believes in and understands about pain will influence how the patient will manage and cope with pain as well as how the patient copes with the pain therapy provided (Glowacki, 2005).

## 5.2 Interventions used by nurses to manage post-operative pain

Nurses and healthcare professionals should device strategies that focus on supporting the patient by finding reliable information that is easily accessible from the media and teach patients more about self-care as this is crucial during the post-operative period (Ingadottir et al. 2016).

Nurses should constantly seek to improve on their basic education and increase their focus on pain management in surgical wards and team up with other healthcare professionals so that the threshold of pain management increases indefinitely (Büyükyılmaz, 2014).

Nurses should create preoperative classes as it is one of the best techniques to guide both the patients and their families since it will provide information that they will go through the whole surgical process substantially and it will reduce the fears that the patient might be expecting (Maheshwari et al. 2009).

Maheshwari et al (2009) includes that it is of great benefit when the nurses are having a patient guiding session that they do it with other patients as well as the families and immediate relatives.

When nurses are introducing patient guidance classes, they should consider the kind of information sources, according to Maheshwari et al (2009) perioperative booklets and videos will go a long way in improving the patients' expectations especially when reinforced verbally, in doing so patients will experience less pain because they are better prepared to cope with the pain therefore, decreasing the overall anxiety expectation levels. High levels of anxiety will increase the sensitivity of the patient's pain (Maheshwari et al. 2009).

The use of the combination of local anesthetic, morphine and indomethacin has shown to have a balanced analgesia effect that has led to accelerated post-operative rehabilitation and reduced length of stay (Scott & Hudson, 1997).

Nurses have to develop effective patient educational interventions (Ingadottir et al. 2016) for example, creating steps that can be followed up daily to ensure that the management of pain is followed up, strategies like this involve; documenting pain intensity scale on a daily basis, pain treatment on routes other than intramuscular, pain should be treated to a degree that it ensures that the quality of life is maintained and patients should be constantly informed on the pain knowledge and management (Karlsten et al. 2005).

### 5.3 Patient guiding

It is important that the nurses encourage patients to understand fully their educational needs and act in accordance to the most preferable method of information delivery that a patient prefers and find easy in terms of pain management (Kennedy, Wainwright et al. 2017).

According to a study done by Maheshwari et al (2009) when patients and their families are educated in the same room, with the use of preoperative booklets and videos can improve the patients' expectations especially if it is enhanced verbally, in this way the patients have a good idea of what to anticipate.

Patients will experience less pain if they know what to expect when they are better prepared to manage ones' and helps even better when they meet up with the team members and discuss interactively, this in turn will reduce the patient's anxiety which could be caused by pain sensitivity (Maheshwari, Blum et al. 2009)

Currently, there is a need for more information to educate the patients and their families on information concerning prior and after hospital discharge as this information is very vital because there is an increasing number of surgeries as well as the short hospital stays for which the patients need this kind of information in the shared decision making (Kennedy, Wainwright et al. 2017)

Perioperative education has been discovered as to minimize perioperative anxiety for hip replacement patients, this is because, anxiety before surgery affects the outcome, it is an uncomfortable psychological state that is directly involved with pain and recovery procedure and the overall ability to understand and retain important information (Bastian 2002; Wallace 1986).

According to the study done by Sugai et al (2013) it is of great importance to the patients about to undergo a surgery that they be educated about endorphins, understanding that endorphins are well involved in psychological wellbeing, pain sensitivity and other multiple aspects in our body, it will help them eradicate the necessity of narcotics in the post-operative pain management (Sugai et al. 2013).

(Sugai, Deptula et al. 2013) the amount of time spent between the patient and the physician, the severity of the surgical procedures, the placebo

effect according to a study done by Sugai et al (2013), patients offered preoperative education intervention, but inactive treatment are some factors that also affect pain management and assessment

Nurses should guide patients on self-management programmes, techniques for relaxation, listening to music as well as back message as this is most helpful for orthopedic patients as they are discharged back home (Büyükyılmaz, 2014).

Because some patients prefer more the traditional and familiar learning ways of self-care following a surgery, especially with the old patients it is therefore important that nurses give the patients the essential resources when there is a need to learn and that these new methods are introduced perioperatively before cognition is weakened, although patients themselves can identify their limitations (Ingadottir et al. 2016).

#### 5.4 Role of nurses in communication

Nurses should exercise good communication with the patients as well as the entire multi-professional team in the healthcare department as Sugai et al (2013) explains, there is the power of persuasive communication in the physical and mental management of the surgical patient.

Nurses have a responsibility to encourage communication with the patient in order to render suitable care that is the foundation of thorough assessment. For the sake of meeting the patients' needs in the assessment and management of pain, it is imperative for the nurses to encourage patients to express their needs and allow them to take a more engaged role in their care (Bell & Duffy, 2009).

Effective communication is key to accurate assessment of pain, healthcare professionals should take adequate time to communicate with patients individually, to help them understand and feel secure to ensure that the patients are comfortable and feel safe in expressing their pain, healthcare professionals should also put effort in understanding the patient despite

issues like language barrier or some form of disability that may hinder communication. (Mackintosh 2007).

The main three factors that affect the expression of pain are the nurses, the patient themselves and the clinical environment. With an acute pain educational programme, there might be remarkable improvement in the knowledge skills and attitudes towards the experience of the patient pain level this is a result from a research conducted by Carr et al (2000), on questionnaires on the benefits of a pain educational programme.

Due to the nature of pain, it could be difficult to the impressionistic nature of pain, communicating pain can be difficult and complicated in terms of language, diverse experiences with pain as well as the diversity in structure between the healthcare worker and the patient (Turk and Melzack, 2001).

According to Sugai et al (2013) communication is very important as it helps in obtaining patient history, collaboration between the multidisciplinary team as well as the patient guiding process, the informed consent and the therapeutic alliance between the nurse and the patient. Good communication helps patients have a sense of control in their care as opposed to the historical paradigm of paternalism of the physician (Sugai et al. 2013).

Nurses should maintain an optimal patient communication level that a patient can easily understand including symptom relief, emotional recuperation as well as recovery and pain control as this helps preserve the patient's wellbeing after a surgical procedure (Sugai et al, 2013).

#### 5.5 Factors influencing post-operative pain management through the patient guiding

According to Institute of medicine (2004) health literacy is concerned with the process , scope to acquire and understand the basic health information in order to make sound decisions on health, while poor health

literacy is concerned with poor abilities to properly take medications, understand labels and health messages (Berkman et al. 2011) as well as temporarily affect in the perioperative stage and affect the patients' motivation to learn about self-care, Kaphingst et al (2004) suggests that these aspects should be considered when planning for patient education.

The difficulty of interpreting research into practice for example development of new analgesics, application of evidence-based practice in clinical situations, along with the combination of interdisciplinary team methods poses as a major challenge in providing the most effective care for patients, from this research it's been discovered that there's a big gap between understanding pain pathology and the proposed pain treatment method (Glowacki, 2015)

The attitudes of the healthcare practitioners and nurses before and after hospitalization will influence the patients positively or negatively determining how they respond to pain management (Scott et al. 1997).

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literacy is concerned with poor abilities to properly take medications, understand labels and health messages (Berkman et al. 2011), it has a significant effect on the care of surgical patients (De Oliveira et al. 2015 as well as temporarily affect in the perioperative stage and affect the patients' motivation to learn about self-care, Kaphingst et al (2004) suggests that these aspects should be considered when planning for patient education.

According to Harmer and Davies (1998) post-operative pain management has been considered insufficient, however post-operative pain can be effectively managed if the patients and the staff involved constantly deliver contemporary education concerning pain and pain management.

Some of the factors affecting pain include; pain location, pain intensity, onset and duration of pain, variability of pain, quality of pain e.g., throbbing, stabbing or shooting pain, words that the patients use to describe the pain, the method preferred by the patient to relieve pain, the effect of pain on the patient and factors that increase or decrease pain if known.



## 6 DISCUSSIONS

The findings from this literature as compared to other literature shows a significance in the attainment of knowledge that is found useful in the management of post-operative pain in the orthopedic patient. 23 articles were appraised and have investigated the role of the nurse in the management of post-operative pain through patient guidance. As much as the articles in this literature review have shown some of the interventions used in the management of post-operative pain, it has also supported other literature that discuss more in depth the pharmacological methods of pain management.

The themes found in this literature review have been widely discussed throughout this literature review. The first theme was the interventions that nurses have used in the management of post-operative pain listing pharmacological, non-pharmacological and a combination of the two. The second theme was pain management strategies which involved strategies that nurses need to know for pain management and relief, patient guidance using education information and goals that nurses should have when it comes to pain management. The third theme was communication, which is very vital in the management of post-operative pain even without adding medication and lastly the role of nurses in post-operative pain management.

After analysis of the 23 articles the main findings were that effective communication between the nurse and the patient is vital in the post-operative pain management as it started from the moment a patient is admitted, collection of information and medical history (Sugai et al. 2013), forming an alliance between the nurse and the patient, teaming up with the multidisciplinary team in the healthcare system, forming alliances for therapeutic measures and nurse-patient team (Sugai et al, 2013).

The important role of nurses involves guiding the patient in a preoperative class, with other patients with the same surgery as well as family as the patients themselves feel comfortable with their relatives and friends.

Another important finding is when to give preoperative information. This is especially needed before the surgery as the consciousness is not impaired by opioids and other medications used in the surgery, all the key information is given before the patient is taken to the operating theatre because after that, the patient may not be able to retain any information due to medication impairment and this will eventually affect the expectation and recovery threshold of the patient.

#### 6.1 Implementations for clinical practice and suggestions for further development

Clinical environment learning is as vital as any educational course in pain management as Wilson (2007) describes, the knowledge provided by an educational programme consequently provides an impact on the application and development of pain management. According to Johnston et al (2007) one on one coaching helped improve the nurses' pain management and assessment practices clinically.

With the increasing convoluted healthcare environment, the requirement for high quality data that is needed by patients in order to manage their health successfully, even though the information is increasingly found on the internet and other sources it has not yet been rendered to increased comprehension and the information about the patients' health has only been created by the healthcare providers without any negotiations from the patients themselves (Kennedy, Wainwright et al. 2017)

Ravaud et al (2004) had similar results and suggested that nurses and physicians should regularly attend to pain management and assessment educational programmes. Phillips (2004) explains that Patients subjected to elective surgery tend to undergo fear and anxiety because they have no idea of what to expect, therefore pre-operative education is important as it gives them knowledge of the probable surgery and it also allows a better relationship between the patient and the nurse before the patient is transported to the theatre (Chetty & Ehiers 2009)

Education programmes are probable ways of increasing the nurses' knowledge and reduce negative attitudes and beliefs about pain relief or satisfaction of the patients (Innis et al, 2004). Lack of competence and training in the healthcare staff can limit the ability to carry out acute pain management service (Hu et al, 2007).

Managing nurses should be conscious of the educational subject about pain management as well as make it easier to use pain assessment tools to enhance comprehension retention. Guardini et al (2008) explains that knowledge decreases progressively if courses on pain management are not regularly refreshed. The authors in this study advocate that these courses should be carried out for at least one year and last about 3-4 hours. The findings suggest that the content of these course should be redefined on issues that have been proven to be hard for the nurses to remember (Guardini, Talamini et al. 2008)

According to Harmer and Davies (1998) post-operative pain management has been considered insufficient, however post-operative pain can be effectively managed if the patients and the staff involved constantly deliver contemporary education concerning pain and pain management.

## 6.2 Limitations and ethical considerations

Finding reliability in a narrative literature review can be very challenging and the reliability of any literature review is dependent on the number of researched articles reviewed. The result of research is supposed to be completed without the authors' own words. According to Polit & Beck (2010) the information in research should be international and unbiased and is confirmed by variable scientific materials. In this final thesis, the databases used were EBSCO, PUBMED and CINAHL. The articles used were from different countries, but the findings were within the target goal of the thesis.

Reviewed in this final thesis are the studies which have well explained the thesis' idea as well as the association between concept and evidence-

based practices done previously. The results, main findings and the methodology used in this final work have been arranged to show the authenticity of this thesis and form the skeletal results that interpret the theory which is scientific and evidence-based practice.

The trustworthiness of this thesis is proved by the use of the methodology criteria. The exclusion criteria used in this thesis was of importance since the findings that were not relevant in this final thesis research question as well as articles that were not in English language were excluded. The results used were obtained from assessment and reflection of the obtained data from the articles analyzed (Polit & Beck, 2010)

This literature review is limited by the number of articles researched as information that conducted the review. Moreover, some relevant research articles have not been added due to the cost of obtaining them (Polit & Beck, 2010). Additionally, the author of this review is a nursing student with no previous research experience and amateur mistakes might have been committed through this research.

## 7 CONCLUSIONS

Knowledge on pain as a concept, the anatomy and physiology as well as pharmacology is very vital to nurses in order for them to effectively manage pain not only in the post-operative period. Understanding clearly what, how and when to manage pain with accurate precision seems difficult but it can be learned through practice and a constant update on the information and knowledge on pain by taking refreshing courses (Guardini et al. 2008).

Communication on the other hand is the mediator between the health and ailment. Nurses should strive to ensure that communication is practiced well throughout life not just for personal use but also for professional use, because communication is the backbone of treatment (Maheshwari et al. 2009). Through communication, many barriers can be broken as well as nurses getting an insight of cues like body language that may present as a challenge especially when dealing with patients from a multicultural environment.

Through communication nurses can develop a deeper connection with patients as this will open a pathway for better and effective treatment, this is because when a nurse and a patient develop a trust bond, there is a likelihood that the patient will convey the exact feelings and the trust between a nurse and a patient will result in reduction in some of the perspectives that both the nurses and the patients hold towards the healthcare system as well as pain and other health aspects.

Post-operative pain management is very important as this literature reveals including the long-term effects of pain to an individual. Nurses should not only be constantly striving to learn new information, update old knowledge as well as find guidelines that are constantly updating on pain and management techniques and tools but also work on becoming individuals that also seek better understanding on what they are dealing with (Mackintosh, 2005).

Nurses play a very important role in the healthcare system as they are the mediators between the healthcare system and the outside world, therefore the nurses role is a vast and important task and nurses should take time to consider this. A nurse's experience can be difficult but also nurses have a responsibility on nursing as a profession as well as to the patients. The wellbeing of a patient is dependent on the nurse. Nurses should seek to constantly develop strategies that are aimed at providing optimal pain management tools as well as the fast-growing technology world. Being in Finland, which is among the top countries with developed technology, nurses should utilize these resources in order to make interventions and strategies to ensure pain becomes close to comfort.

This final thesis was under supervision of one of the finest thesis supervisor, who has an experience in many years of supervising thesis, has a PhD and is a senior lecturer. The author believes that the specific supervisor has very broad knowledge and experience in the field of research and as a supervisor. This literature review would not have been completed without this particular supervisor.

Doing the final thesis process was not easy, it had its own challenges. The thesis topic was broad but finding the specific answer to the thesis topic; post-operative pain management in the orthopaedic patient was challenging because the author sought to find specific results on the interventions of nurses on post-operative pain management.

The results for this very topic were widely scattered. This made it challenging for the author during the selection of the right articles. And thus, multiple studies were used to find out the results of the aim of this thesis. However, on the bright side the reviewed articles showed the nursing interventions of post-operative pain management as well education role in the management of post-operative pain in the orthopaedic patient.

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All of these articles are based on empirical research. 23 articles are research based. 2 of the research articles are systematic reviews.

## APPENDIX 2

Table 2 Summary of the literature reviewed

TITLE	AUTHORS, YEAR OF PUBLICATION AND COUNTRY OF PUBLICATION	PURPOSE OR AIM OF THE STUDY	DATA COLLECTION, ANALYSIS AND SAMPLE/PARTICIPANTS	MAIN FINDINGS	KEYWORDS
<p><b>“Non-pharmacological interventions of orthopedic pain: A systematic Review”</b></p>	<p>Büyükyılmaz, F. 2014. Istanbul, Turkey</p>	<p>To improve the quality care in acute or chronic pain. To find out what kind of non-pharmacological interventions used in reducing pain in the orthopedic patient.</p>	<p>A systematic literature review of 17 studies using The Oxford 2011 Levels of Evidence. Articles were searched from databases of Medline, PubMed, Cochrane, and Cumulative Index to Nursing and Allied Health Literature (CINAHL).</p>	<p>non- pharmacological approach is more effective in orthopedic patients’ pain. The author feels that this is a key study that shows the safe non-pharmacological interventions in acute and chronic orthopedic pain. Non-pharmacological interventions, such as self-management programs (30 minutes), relaxation techniques/guided</p>	<p>Pain, Pain Management, Orthopedic Patients, Nursing Care, Non-Pharmacological Interventions.</p>

				<p>imagery/listening to music (16-20 minutes), and 10 minutes back massage are defined as helping to ease the intensity of pain in orthopedic patients (combined with background music) and listening to music reduced muscle tension and pain by distracting patients and decreasing vital signs, progressive muscle relaxation, particularly for chronic pain, jaw relaxation as a systematic relaxation intervention for relieving acute pain, slow back stroke as well as back massage that consisted of .For effective pain management, nurses can implement these interventions safely. The results suggest that self-management programs, relaxation techniques, guided</p>	
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				imagery, listening to music, and back massage are defined as helping to ease the intensity of pain in orthopedic patients.	
<b><i>“Attitudes, beliefs and self-competence about post-operative pain among physicians and nurses working on surgical wards”</i></b>	Rognstad, M-K. Freoheim, O.M.S. Johannssen, T.E.B. Skauge, M. Undall, E. Rustoen, T.  2012. Norway (Northern, Central and Southern Norway)	To investigate attitudes beliefs and self-reported competence with regards to pain management in Nurses and Physicians in surgical wards. Interprofessional differences between Nurses and Physicians was examined also.	Journal Article. A Descriptive cross-sectional survey. Questionnaire. Empirical study. Nurses and physicians from 17 different hospitals in surgical wards were chosen. A total of 795 physicians and nurses in surgical wards working on one random week were chosen for the questionnaire. 128 physicians and 407 nurses completed the questionnaire (response rate 68%)	Findings from this study suggest that Even though the majority of physicians and nurses described themselves as competent in management of nociceptive pain and thought that patients often or very often achieved satisfactory pain relief, the respondents reported dissatisfaction with the annual updates in pain management and poor competence in treatment of neuropathic pain. Considering that pain is not only a sensory but also an emotionally related phenomenon, health care	postoperative pain, pain management, attitudes, beliefs, competence, health professionals.



				professionals should be updated on these non-pharmacological methods. There is need to improve basic education and increase the focus on pain management among health professionals on surgical wards.	
<b><i>“Assessment and management of patients with post-operative pain”</i></b>	Mackintosh, c. 2007	To assist healthcare professionals in the effective assessment and management following surgical procedures. For healthcare professionals to review the current post-operative pain management with a view of introducing practice changes to improve patient care.	Nursing standard Research. Guideline.  Keywords were searched from British Nursing Index using subject headings.	Findings from this study states that post-operative pain management strategies should focus on both pharmacological and comfort measures. Pharmacological management should be appropriate to the patient's needs. Good nursing care at all levels is key. In order to provide effective post-operative pain relief and it is a fundamental function of the nurse's role to ensure that unnecessary	Pain management, Pharmacological management, post-operative pain.

				discomfort is minimised. Effective communication is fundamental in pain assessment.	
<b><i>“Multimodal pain management after total hip replacement and knee arthroplasty at the Ranawat Orthopedic Center”</i></b>	Maheshwari, A.V. Blum, Y.C. Shekhar, L. Ranawat, A.S. Ranawat, C.S. 2009. New York, USA.	To determine the optimal regimen to control postoperative pain while limiting the side effects of medications.	Evidence based. symposium: advanced techniques for rehabilitation after total hip and knee arthroplasty.	Findings from this research suggest that achieving a painless Total Knee Arthroplasty and Total Hip Arthroplasty is within reachable grounds if the use of regional anesthesia and multimodal pain techniques are combined. Multimodal protocols after THA and TKA have been a substantial advance; they provide better pain control and patient satisfaction, lower overall narcotic consumption, reduce hospital stay, and improve function while minimizing complications.	
<b><i>“Public perception of post operative pain and it’s relief”</i></b>	Scott, N.B. Hodson, M. 1997. Scotland and Yorkshire.	To evaluate the general public’s knowledge of	Qualitative analysis	The finding from this survey indicate that attitudes to pain greatly varies and this study confirms with other surveys that	Pain postoperative, Education, patients, doctors.

		post-operative pain and its management	<p>Questionnaire (sample questionnaire)</p> <p>529 Participants volunteered. 515 of the questionnaires were included in the survey and 14 discarded due to insufficient answers.</p>	<p>the general public has little to no understanding of post-operative pain nature as well as the methods available to manage pain. According to this article the public has a high degree in confidence in the doctors and nurses to manage their pain and therefore public education is required before further improvements can be made about the universal similar clinical problem. Results suggest about 82 per cent of people surveyed agreed that pain after a major operation is unbearable for most people and should be promptly treated and yet 46% were themselves prepared to suffer pain rather than complain. overall patient satisfaction cannot be regarded as a true objective end point for this particular problem since there is such poor public</p>	
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				<p>understanding of postoperative pain</p> <p>the attitude of their general practitioner before and after hospitalization may influence some patients.</p>	
<p><b><i>“The effect of education, Assessment and standardised perception on post operative pain management, the value of clinical audit in the establishment of acute pain services”</i></b></p>	<p>Harmer, M. Davies, K.A. 1998. United Kingdom</p>	<p>To evaluate the effect of sample methods of pain assessment and management of post-operative pain.</p>	<p>Survey. Evidence Based. Audit. 2738 patients in 15 hospitals.</p> <p>The study consisted of 4 parts:</p> <p>a survey of current practice in each hospital; a programme of education for staff and patients regarding pain and its management;</p> <p>the introduction of formal assessment and recording of pain and the use of a simple algorithm to allow more flexible, yet safe, provision of intermittent</p>	<p>This study shows that simple techniques for the management of postoperative pain are effective in reducing the incidence of pain both at rest and during movement and should form part of any acute pain management strategy. From this research the educated patients gained information about opioid usage and what to expect as well as well as patient’s pain relief expectation to be achievable even after previous pain experiences.</p>	<p>Pain, postoperative; management. Anaesthesia; audit.</p>

			<p>intramuscular opioid analgesia; a repeat survey of practice.</p> <p>Inclusion Criteria selected One hospital from each of the former health regions of England and Wales.</p>		
<p><b><i>“The importance of communication in the management of post-operative pain”</i></b></p>	<p>Sugai, D.Y. Deptula, B.A.: Parsa, A.A. Parsa, F.D. 2013</p>	<p>To investigate the importance of communication in survey and how delivering preoperative patient education can lead to better health outcomes post-operatively through promoting tolerable pain scores and minimizing the use of narcotics after surgery.</p>	<p>Study-experimental trial. Volunteer participants undergoing elective studies. A total of 135 patients placed in control groups of patients receiving preoperative patient education (experimental group) and patients who did not receive patient education (control group).</p> <p>The authors have no interest in the medications as reported in</p>	<p>This study illustrates the power of patient education via oral, written and visual communication, which can serve as an effective means to minimize narcotic analgesia after surgery.</p> <p>By empowering the patient with a sense of control and proper education, it is possible to minimize and, in many instances, eliminate the use of opioid analgesics.</p>	<p>endorphins, education, narcotics, communication.</p>

			<p>this study. The authors report no conflict of interest.</p>	<p>effective communication with the patient should be emphasized with not only the operating surgeon, but also the anesthesiologist and possibly with other members of the surgical team</p>	
<p><b>“A qualitative study of patient education needs for knee and hip replacement”</b></p>	<p>Kennedy, D. Wainwright, A. Pereira, L. Robarts, S. Dickson, P. Christian, J. Webster, F. 2017</p> <p>Canada (Canadian orthopaedic centre specialized in joint replacement surgery)</p>	<p>To elicit patient experiences and the need for information and delivery preferences for education of families and patients undergoing knee and hip replacements</p>	<p>Descriptive Qualitative study. Semi-structured interview</p> <p>6 focus groups, and 7 telephone interviews totalling to 32 participants.</p>	<p>The findings prove that multi-modal patient education well suits the individual preferences and experiences that may differ according to age and gender. Developing pain management education in different formats that addresses the frequently asked questions will enhance patient engagement and overall experience and recovery.</p>	<p>Patient engagement, Hip and knee replacement, Education, Pain management, Person-centred care</p>

<p><b><i>“Perceptions about traditional and novel methods to learn about post-operative pain management: - a qualitative study”</i></b></p>	<p>Ingadottir, B. Blondal, K. Jaarsma, T. Thyllen, I.  2016. Iceland (Icelandic university hospital)</p>	<p>To explore the perceptions of surgical patients about traditional and novel methods to learn about post-operative pain management.</p> <p>There has been no conflict of interest with the authors about the research topic.</p>	<p>A qualitative descriptive study with semi-structured individual interviews based on a vignette was used. Content analysis. Inductive, qualitative</p> <p>Participants were 13 patients who had undergone elective surgery of either cardiac or orthopedic surgery. Inclusion criteria was of patients above the age of 18, ability to understand and speak Icelandic, no cognitive impairment, having had a complication-free elective surgery within 30 days of data collection for a non-malignant disease and having been discharged from hospital for at least one week before the interview.</p>	<p>Patients preferred face-to-face education with a nurse, followed by brochures and websites, while games were least preferred. Two categories, each with two sub-categories, emerged from the data. These conceptualised the factors affecting patients’ perceptions: 1) ‘Trusting the source’, sub-categorised into ‘Being familiar with the method’ and ‘Having Perceptions about traditional and novel methods own prejudgments’; and 2) ‘Being motivated to learn’ sub-categorised into ‘Managing an impaired cognition’ and ‘Aspiring for increased knowledge’</p>	<p>Content analysis, educational methods, nursing, patient education, patient learning, post-operative self-care, vignettes.</p>
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<p><b><i>“Preoperative education for hip or knee replacement”</i></b></p>	<p>McDonald, S. Page, M.J. Beringer, K. Wasiak, J. Sprowson, A. 2014. North America (Canada and, USA) Europe; (Scandinavia, continental Europe and UK.)</p>	<p>To determine whether preoperative education in people undergoing total hip replacement or total knee replacement improves post- operative outcomes with respect to pain, function, health-related quality of life, anxiety, length of hospital stay and the incidence of adverse events (e.g. deep vein thrombosis)</p>	<p>Systematic Review. Meta-analysis of 10 studies. Quasi-randomized trials of preoperative education. Thirteen trials for THA and three for TKA</p>	<p>To determine whether preoperative education in people undergoing total hip replacement or total knee replacement improves post-operative outcomes with respect to pain, function, health-related quality of life, anxiety, length of hospital stay and the incidence of adverse events (e.g. deep vein thrombosis).</p> <p>Preoperative education may represent a useful adjunct, with low risk of undesirable effects, particularly in certain patients, for example people with depression, anxiety or unrealistic expectations, who may respond well to preoperative education that is stratified according to their physical, psychological and social need.</p>	
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<p><b><i>“Orthopedic patient’s perceptions about their preoperative information”</i></b></p>	<p>Chetty, c. and Ehlers, V.J. 2009. South Africa.</p>	<p>to explore and describe the perceptions of orthopaedic patients, who had undergone elective surgery and about the pre-operative information provided to them.</p>	<p>Quantitative survey. A non-experimental, exploratory, descriptive and quantitative research design was used. Participants were 50 orthopedic patients that requested information about their perceptions concerning the preoperative information they had received. Face-to-face structured interviews were used.</p>	<p>Findings from this article suggest that recommendations will be provided for enhancing the pre-operative information provided to orthopaedic patients and for conducting future research. most patients perceived the pre-operative information to be useful in their preparation for surgery. Aspects that were not addressed during preoperative information sessions included post-operative nutrition, pain medication, ambulation, deep breathing and coughing exercises. Many respondents would have appreciated more opportunities for asking questions, and for clarifying medical terms.</p>	<p>patients' perceptions, pre-operative information, orthopaedic patients.</p>
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<p><b>“Ambulatory orthopaedic surgery patients’ emotions when using two different patient education methods”</b></p>	<p>Heikkinen, K. Salanterä, S. Leppänen, T. Vahlberg, T. Leino-Kilpi, H. 2012. Finland.</p>	<p>To evaluate changes in ambulatory surgery patient’s emotions during the surgical process and compare whether the two different methods: Internet-based Patient Education (experimental) or Face-to-face education conducted by a nurse (control) had an effect on patient’s emotions during the ambulatory surgical process.</p>	<p>Questionnaire. Randomised control trial study. All ambulatory orthopedic surgery patients (n=173). Inclusion criteria on ages of over 18 years. Finnish speaking, access to home internet and knowing how to use it, physically not impaired, being capable of completing the instruments and the informed consent form. Excluded patients who had a physical status classification system (ASA) over 11 (n=11).</p>	<p>The findings of this research indicate that ambulatory orthopaedic surgery patients did not report high scores for their emotions. Patients' evaluations of their emotional scores varied during the surgical process and were not impacted by the education they received. The findings suggest that internet-based patient education and face-to-face education are relevant methods in ambulatory orthopaedic surgery patients' education.</p>	<p>Patient education, Internet, ambulatory surgery, emotion.</p>
<p><b>“The effectiveness of continuing education in the post-operative pain management;</b></p>	<p>Guardini, I. Talamini, R. Fiorillo, F. Lirutti, M. Palase, A. 2008. Continuing Education Centre, Santa Maria</p>	<p>To investigate the effectiveness of continuing education in relation to pain management course</p>	<p>Scientific Research, Follow-up study. Questionnaire.  168 Participants</p>	<p>Findings show that knowledge is progressively lost if refresher courses are not held on a regular basis.</p>	

<b>Results from a follow up study”</b>	della Misericordia Hospital, Udine, Italy.	and to evaluate the results after 18 months.	Analysis was done using SAS software.		
<b>“Improving the assessment of post-operative pain in surgical wards by education and training”</b>	Karlsten, R. Ström, K. Gunningberg, L. 2005. Uppsala University Hospital, Sweden.	To improve postoperative pain organisation and management in hospitals. One of the most important factors in achieving this is to improve active assessment of pain in the postoperative phase.	Report. Follow-up audit of patient records. A sample of 30 patient records from 9 wards was selected. Inclusion criteria was general surgery or orthopaedic surgery of any kind, both emergency and elective surgery	Findings from this study suggests that in order to increase the awareness of pain and improve pain assessment, the importance of mandatory training, regular staff meetings and regular audits must be emphasised. It is also imperative to give feedback on the regular audits to the ward and staff members involved. Pain has to be visualised and assessing pain in the postoperative period is essential for improving pain management.  Pain control representatives are important as facilitators and for communicating results from audits, for implementing changes	

				in care, and to increase awareness of pain as a problem in everyday care.	
<b><i>“current concepts and practice in post-operative pain management; need for change?”</i></b>	Filos, K.S. Lehmann, K.A. 1999. Germany.	To provide subjective pain relief while minimizing analgesic-related side effects, to allow early return to normal function and activity by inhibition of trauma-induced nociceptive impulses, which provoke autonomic and somatic reflex responses resulting in cardiovascular, respiratory and neuroendocrine dysfunction, and to		Advanced techniques are available including epidural or intrathecal administration of local anaesthetics and opioids, various opioid administration techniques such as patient-controlled analgesia and infusions via sublingual, oral-transmucosal, nasal, intra-articular and rectal routes. Nonopioid analgesics such as nonsteroidal anti-inflammatory drugs and newer nonopioid drugs such as $\alpha_2$ -adrenergic agonists, calcium channel antagonists and various combinations of the above are possible. However, the solution to	Pain, Analgesia, postoperative, Patient-controlled analgesia, Pain, Postoperative drug therapy, Acute pain management programs

		<p>reduce side effects related to untreated postoperative pain which may account for increased morbidity and prolonged hospital stay.</p>		<p>the problem of inadequate pain relief lies not so much in the development of new drugs and new techniques, but in the effective strategy of delivering these to patients through the introduction of acute pain management services on surgical wards.</p>	
<p><b>“Acute post-operative pain in trauma patients- the fifth vital sign”</b></p>	<p>Farčić, N. Barac, I. Pačarić, S. Lovrić, I. Ilakovac, V. 2017. Croatia.</p>	<p>To determine average pain intensity perceived by trauma patients at hospital admission, lowest and highest pain intensity during their hospitalisation and their satisfaction with provided pain treatment.</p>	<p>Cross-sectional quantitative research. 114 operated trauma patients were the sample group. inclusion criteria consisted of patients over the age of 18, who were operated at the Clinical Department of Trauma Surgery, and whose length of stay after the surgery was three or more days.</p>	<p>Findings from this research suggests that female patients have a higher pain intensity during and after admission, some of the respondents that received severe pain reported that nurses did not ask them on pain assessment at some point and that good communication between patients and staff is important for effective pain</p>	<p>Acute pain, NRS, trauma, pain assessment, satisfaction of patients.</p>

				management together with acute pain assessment and evaluation of pain.	
<b><i>“Perceptions of pain levels among orthopedic surgery patients, their relatives and nurses”</i></b>	Yıldırım, M. ÇizMEciYan, E.S. KaYa, G. Başaran, Z. KaraMan, F.Ş. DurSun, S. 2015. Sweden	To investigate pain levels of orthopedic surgical patients and how pain is perceived by their relatives and nurses.	Qualitative study	Findings from this article show that education on pain management and the physical and emotional reactions of patients to pain should be provided for nurses working in surgical clinics, while the relatives should be informed about possible pain behaviours in the postoperative period in order to prepare them for their role in the patient's care.	Nurses; orthopedic surgery; pain intensity; pain perception; patients' relatives.
<b><i>“post-operative pain assessment and management the effects of an educational</i></b>	Abdalrahim, M.S. 2009. Sweden.	To describe the current nursing postoperative pain assessment and management practices in the surgical wards in	Qualitative and Quantitative approaches. Prospective descriptive. Face to face interviews with nurses, 12	Findings from these studies draw attention to the fact that there is an urgent need for improving Post-Operative Pain assessment, management and documentation.	postoperative pain, nurses' knowledge, nurses' attitudes, surgical wards, pain

<p><b><i>program on Jordanian nurses' practice, knowledge and attitudes"</i></b></p>		<p>Jordan and evaluate the effectiveness of implementing a postoperative pain management program in improving the Jordanian nurses' Post-operative pain assessment and management practices in the surgical wards</p>	<p>registered nurses, qualitative content analysis.</p>	<p>The findings also suggest that the post-operative pain management programme resulted in better communication between patient and nurses, nurses developed the habit of assessing post-operative pain intensity using numeric rating scales, in addition to the assessment of other pain characteristics</p>	<p>management program, Jordan</p>
<p><b><i>"Effective pain management and improvements in patients' outcomes and satisfaction"</i></b></p>	<p>Glowacki, D. 2015.</p>	<p>To discuss improved outcomes due to effective pain management in patients with acute pain, highlight the dimensions of pain management, review use of recommended evidence-based</p>	<p>Review</p>	<p>Findings suggest that What a patient believes and understands about pain is critical in influencing the patient's reaction to the pain therapy provided and also that the use of interdisciplinary pain teams can lead to improvements in patients' pain management, pain education, outcomes, and satisfaction.</p>	

		practices in pain management and assessment, describe the pathophysiology of pain, update research findings on multimodal balanced analgesia, and report the increase in patient satisfaction related to effective pain management			
<b><i>“Pain assessment and management in surgical nursing; a literature review”</i></b>	Bell, L. Duffy, A. 2009. Ireland.	To establish the main barriers to effective postoperative pain relief in clinical practice	Literature review.	Findings suggest that time management, and attitudes and beliefs of both patients and nurses are significant factors hampering practice and that future research in this area is futile and suggest that nurses should focus on auditing their own practice to improve the	Audit and research, Pain assessment, Pain management, Surgical nursing



				effectiveness of pain management in practice and enhance standards of care.	
<b><i>“An update to representational approach to patient education”</i></b>	Ward, S.E. Heidrich, M.S. and Donovan, H.S. 2007	To provide an update on the Representational Approach to patient education.	A randomized trial of 176 persons with cancer-related pain	Findings from these trials support that interventions based on the representational approach are efficacious. In addition to important information to strengthen the approach and to extend it to novel clinical problems and delivery modes these trials are provided.	Patient education, intervention research, symptom management, pain management, oncology, end of life care
<b><i>“Effect of education on knowledge, skills and attitudes around pain”</i></b>	McNamara, M. C. Harmon, D. Saunders, J. 2012. Ireland	To assess the effectiveness of an acute pain educational programme in improving nurses' knowledge, skills and attitudes around	Evidence-Based Practice. Questionnaire. Mixed-methods experimental approach. 59 Female Nurses.	Findings from this research suggest that the acute pain educational programme intervention in this study improved nurses' knowledge and attitudes towards pain assessment and management as it was most	Attitudes, Postoperative pain, Educational study course, Pain management

		postoperative pain management.		effective immediately after the pain education programme.	
<b><i>“Pain management: an assessment of surgical nurses’ knowledge”</i></b>	Puls-McColl, P.J. Holden, J.E. Buschmann, M.T. 2005. USA	To identify nurses’ knowledge of pain management.	Non-experimental design. Questionnaire. Descriptive statistics. 25 orthopedic surgical nurses.	Findings from this study suggests that there are 3 main areas where effective pain management is underscores; inadequate assessment by nurses, patient’s reluctance to report pain and lack of time adequacy by nurses to assess pain.	Pain, Therapy Pain Measurement Nurse Attitudes, Evaluation Nursing Knowledge

### APPENDIX 3

#### Research categories

INTERVENTIONS	COMMUNICATION	EDUCATION	PATIENT GUIDANCE	ATTITUDES, PERCEPTIONS & EXPERIENCES	PAIN MANAGEMENT STRATEIEES	FACTORS AFFECTING & IMPLEMENTATION
<p>Combination of pharmacological and non-pharmacological</p> <p>balanced analgesia has led to accelerated post-operative rehabilitation and reduced in hospital stay</p> <p>development of more effective patient educational interventions</p> <p>healthcare professionals need to be aware of the</p>	<p>Patients experience a sense of control in their care</p> <p>obtain patient history, collaboration between multidisciplinary team, patient education, informed consent, forming therapeutic alliance between patient and nurse</p> <p>patient education via oral, written, and visual communication was shown to be an effective to minimize narcotic analgesia after surgery</p>	<p>Up to date education for staff and nurses on pain management and pain</p> <p>up-to-date education regarding pain and its management</p> <p>education on pain management and the physical and emotional reactions of patients to pain should be</p>	<p>Guide patient on what to do if pain becomes unacceptable</p> <p>preoperative class is one of the best techniques available to educate patients and their families because it provides information on what will happen to them</p>	<p>unrealistic preoperative expectations of recovery, including those for pain and function, which may lead to high levels of dissatisfaction</p> <p>people who have not experienced previous surgery think simple pain killers such as aspirin</p> <p>lack of adverse reporting is a lack of knowledge amongst patients</p>	<p>clinical nurse specialists, standardized pain assessment tools</p> <p>multi &amp; unidimensional tools</p> <p>consideration the quality of pain controls a hospital provides</p> <p>Introduction to acute pain services</p> <p>introduction of simple guidelines can produce improvements in</p>	<p>time management</p> <p>attitudes of patients</p> <p>attitudes of nurses</p> <p>continuing educational programmes</p> <p>evidence-based pain management</p>

<p>factors influencing patients' perceptions</p> <p>increase the awareness of pain and improve pain assessment</p> <p>mandatory training</p> <p>regular staff meetings and regular audits</p> <p>give feedback</p> <p>pain intensity should be documented</p> <p>pain should be prevented and controlled</p> <p>patients should be adequately informed and knowledgeable about pain management</p>	<p>means of educating the patient</p> <p>method for preserving a patient's well-being</p> <p>optimal physician-patient communication can improve the patient's health including symptom resolution, emotional healing and recovery, and pain control</p> <p>Patients preferred face-to-face education with a nurse</p>	<p>provided for nurses working in surgical clinics</p> <p>guidelines and education on pain assessment and the use of pain assessment</p> <p>educational programmes in pain management can improve nurses' knowledge of pain</p>	<p>throughout the surgical phase</p> <p>patients and their families to learn in a classroom setting with other patients undergoing the same type of procedure</p> <p>sources of information; preoperative booklets and videos improve the patients' expectations, especially if verbally reinforced</p> <p>decrease a patient's anxiety</p> <p>empowering the patient with a sense of control and</p>	<p>themselves of post-operative pain and the options available to treat it</p> <p>negative experiences of medication side effects.</p> <p>afraid to ask about medication</p> <p>are without recourse regarding pain medication once they leave the hospital</p> <p>searched Google for information on the surgery or recovery process, many did not question the validity or accuracy of this information</p> <p>Patients frequently identified friends and families as an</p>	<p>post- operative pain relief.</p> <p>Programmes that aim to enhance each component part of the patient pathway, preoperative education to postoperative rehabilitation</p> <p>development of advanced methods for treating postoperative pain</p> <p>quality systems for planning,</p> <p>performance, evaluation,</p> <p>improvement of the giving care - staff should be involved in this work</p>	
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<p>What a patient believes and understands about pain is critical in influencing the patient's reaction to the pain therapy provided</p> <p>pain should be treated by a route other than the intramuscular route</p> <p>interventions based on the representational approach are efficacious - strengthen the approach and to extend it to novel clinical problems and delivery modes</p> <p>preoperative educational intervention</p>			<p>proper education</p> <p>effective strategies that support and educate patients both prior to, in hospital and after discharge</p> <p>education related to expected levels of post-operative pain, the purpose of the prescribed medications, information on how to take the medications, their side effects and how to "wean off" pain medications</p> <p>opportunity to ask questions for clarification</p>	<p>important source of information</p> <p>stories from other people that their surgeries had been successful seemed to go a long way toward reassuring participants</p>	<p>communication between patient and nurse</p>	
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			<p>as well as participate in the guidance together with the nurses</p> <p>Pain has to be visualized and assessing pain</p> <p>understand and use pain assessment tools</p>			
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