What is the current knowledge and attitudes of Western Australian final semester registered nursing students undertaking a Bachelor of Science (Nursing) towards patients’ pain management?

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Declaration

The thesis has been completed during the course of my enrolment in the Master of Health Professions Education (90670) at The University of Western Australia and has not previously been accepted for a degree at this or any other institution.

I certify that this thesis is my own composition and to the best of my knowledge all sources have been acknowledged. It does not contain any material previously published or written by another person except where due reference is made in the text and my contribution is clearly identified in the thesis.

No part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of The University of Western Australia and where applicable, any partner institution responsible for the joint-award of this degree.

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Written patient consent has been received and archived for the research involving patient data reported in this thesis.

This thesis does not contain work that I have published, nor work under review for publication.

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Abstract

A review of available literature exploring the knowledge and attitudes of nurses and other healthcare professionals involved in the assessment and management of patients experiencing pain consistently reveals a deficit in this complex area of care. The purpose of this study was to evaluate the level of final semester registered nursing students’ knowledge and attitudes towards pain management. The Knowledge and Attitudes Survey Regarding Pain (KASRP) was chosen as the data collection tool, as it has been validated and employed internationally to compare diverse groups of health care professional including senior pain experts, physicians and nurses of varying levels of experience.

A mixed-methods non-experimental research design was used for this study. The survey was administered to two groups of final semester registered nursing students from two Western Australian Universities. Data from the 55 students were collected with respondents scoring an average of 64% from the 36-item survey. Statistical analysis of the data using the Statistical Package for the Social Sciences (SPSS) identified deficits in participant nurses’ knowledge and attitudes towards pain and pain management, particularly in pharmacology and opioid administration. Further analysis of the KASRP results found that there were no significant differences in scores between the students based on demographics such as age, gender and previous experience.

Six of the 55 respondents agreed to be interviewed following administration of the survey. Data generated from these interviews revealed that respondents believed their current levels of knowledge surrounding pain management and assessment was basic at
best. Furthermore, they believed the curriculum content learnt at university was insufficient to their learning needs and that it was not until they commenced clinical practicum in the healthcare setting that they acquired authentic knowledge in managing pain.

Results from this research are consistent with other studies and support a widespread concern regarding inadequacy in the knowledge and attitudes of nursing students regarding pain and its management. It is anticipated that educational initiatives to improve students’ knowledge and attitudes in this area could assist to enhance nurses’ awareness and possibly lead to improved practises. Suggestions include an exploration of the factors that contribute to the reasons why students perform poorly in certain areas on a case-by-case basis. Practical training strategies could concentrate on these results focusing on the greater application of knowledge to clinical practise including clinical reflection and discussion, greater use of simulation techniques and the development of Dedicated Education Units (DEU) to help narrow the theory-practise gap in undergraduate nursing education.
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Acronyms

ABS - Australian Bureau of Statistics

ACHS - Australian Council of Healthcare Standards

ACSQHC - Australian Council for Safety and Quality in Healthcare

ADR – Adverse Drug Reactions

AHCPR - Agency for Health Care Policy and Research, United States of America

AHPRA – Australian Health Practitioner Registering Authority

AIHW - Australian Institute of Health and Welfare

AIN – Assistant in Nursing

ANMAC – Australian Nursing and Midwifery Accreditation Council

ANMC - Australian Nursing and Midwifery Council

ANOVA - Analysis of Variance

ANZCA - The Australian and New Zealand College of Anaesthetists

ATAR - Australian Tertiary Admission Rank

CPG - Clinical Practice Guideline

CNE – Continuing Nurse Education

CPD – Continuing Professional Development

DEU - Dedicated Education Unit

DVT – Deep Vein Thrombosis

EN – Enrolled Nurse
ESL - English as a Second Language

HREC - Human Research Ethics Committee

HFS – High Fidelity Simulation

IASP - International Association for the Study of Pain

ICU - Intensive Care Unit

IM - Intramuscular

IV- Intravenous

JBI - Joanna Briggs Institute for Evidence Based Nursing and Midwifery, Australia

JCAHO - Joint Commission for the Accreditation of Health Care Organisations

NHMRC- National Health and Medical Research Council of Australia

NKAS- Nurses’ Knowledge and Attitudes Survey Regarding Pain

NMBA – Nurses and Midwifery Board of Australia

NP – Nurse Practitioner

NRS- Numerical Rating Scale

NSAID- Non-Steroidal Anti-Inflammatory Drug

NSQHS - National Safety and Quality Health Service Standards

OTC – Over the Counter

PAINAD – Pain Assessment in Advanced Dementia

PAT- Pain Assessment Tool

PCA (1) - Patient-Controlled Analgesia

PCA (2) – Patient Care Attendant
PCEA- Patient-Controlled Epidural Analgesia

PE – Pulmonary Embolism

PO- Oral

PMI - Pain Management Index

PRN- Pro-re nata

RN- Registered Nurse

SC- Subcutaneous

SD – Standard Deviation

SPSS - Statistical Package for the Social Sciences

TAFE - Technical and Further Education

TENS - Trans-cutaneous Electrical Nerve Stimulation

UK – United Kingdom

US – United States

VAS - Visual Analog Scale

WHO - World Health Organization
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Chapter 1 Introduction

"Pain is what the person says it is and exists whenever he or she says it does" (McCaffery, 1968).

1.1 Background

Irrespective of age or gender, pain is a primary reason for people to seek health care. \(^1\,^2\,^3\) The treatment and management of pain is considered to be a basic human right with many leading pain, medical and nursing organisations having published statements on the subject.\(^4\,^5\) Chronic pain particularly, is a worldwide issue with adults reporting a 15-25% incidence rate, increasing to 50% for those aged 65 years and over.\(^5\,^6\,^7\) In Australia, it is reported that one in five people live with chronic pain, with the prevalence rising to one in three over the age of 65 and projected to rise further with an ageing population.\(^8\) In Europe, the situation is similar with a 2011 systematic search finding a one-month prevalence of moderate-to-severe non-cancer chronic pain of 19\%.\(^9\)

Despite advances in pain research relating to management and treatment, the problem still persists. With nurses often having the greatest primary contact with patients the questions arise as to whether nurses have adequate knowledge regarding the management of pain and whether misconceptions on pain are impeding its treatment. Providing quality care to all patients is a basic role for all nurses so having adequate knowledge regarding how to assess and manage pain is vital. This study was designed to investigate whether nursing students have the necessary competencies and knowledge to provide quality care in this area.
Specifically, the study has been designed to investigate the current knowledge and attitudes of final semester registered nurse (RN) students regarding the management of chronic pain. Based on previous studies that have found a lack in knowledge and misconceptions regarding pain, the aim of the current study was to discover if gaps do exist in this cohort and to use the findings as a basis of examining educational approaches to improve the preparation of students in managing pain.

Pain control is an important component of the care and management of all patients as unrelieved it can lead to negative physical and psychological outcomes for both patients and their families. Using critical decision-making skills, nurses perform primary and ongoing assessments to accurately and effectively manage pain. It is primarily a nurse’s role to make decisions on analgesic administration to patients based on that assessment. For patients to receive the highest standard of care in terms of pain management it is essential that all undergraduate health professionals including nursing students receive a high level of education in relation to pain assessment and management. International studies have demonstrated that many nurses possess inadequate knowledge of pain, particularly chronic pain, and this in turn, may lead to under-treatment. It has also been noted that inappropriate attitudes towards pain management are at times demonstrated by both nurses and nursing students including non-belief of the presence of pain and the judgement that patients were just seeking pain medications. In Australia research on the issue of pain management practices of nursing students is relatively limited so it is unknown if the same situation exists here.
Relief of pain is considered to be a basic human right, but studies have demonstrated that in many cases it is undertreated.\textsuperscript{12,13,14} Although multifactorial, it remains that inadequate knowledge on assessment and management techniques of pain combined with misconceptions and attitudes of nurses toward pain are significant contributors to the problem.\textsuperscript{1,12,15}

Examination of the literature confirms that these deficits commence during undergraduate study, so it is vital that nursing students achieve a comprehensive knowledge of pain in their undergraduate nursing programs.\textsuperscript{16–18} If nursing students lack knowledge and adequate education to assess and manage pain, it is the patient who ultimately suffers.

Using a sequential mixed-methods non-experimental design, this study aims to describe the knowledge and attitudes of a group of final semester nursing students regarding pain assessment and pain management. It also offers insights into areas of strengths and weakness regarding pain management knowledge with the purpose of informing nursing curricula.

1.2 Current Structure of Nursing Education

In Australia, there are three types of nurses; enrolled nurse (EN), registered nurse (RN) and nurse practitioners (NP), each with different skill levels, knowledge and qualifications. This research is focusing on registered nursing which is a three-year undergraduate course studied at universities that are accredited to do so with the Australian Nursing and Midwifery Accreditation Council.\textsuperscript{19}
Historically, nursing education in Australia was conducted in the public hospital system where training following an apprenticeship-based model. While this model of education produced skilled graduates, there was concern that they lacked theoretical knowledge.\textsuperscript{20} Peak nursing bodies lobbied for professional nursing education to be transferred to the tertiary sector arguing that nursing needed a research base to develop knowledge and facilitate safe practise.\textsuperscript{20} From the mid-1980s, nursing education moved from being primarily hospital-based to the tertiary setting. This model included classroom-based teaching and practical components.\textsuperscript{21} Since 1994 all registered nurses have been educated in universities graduating with a bachelor’s degree.\textsuperscript{20}

Clinical placement is regarded as the keystone of nursing education, providing nursing students with opportunities to connect theory to practise, familiarise themselves with the clinical environment and provide them with practical opportunities to develop the knowledge, attitudes and skills as required by the Australian Nursing and Midwifery Council for practicing professionally.\textsuperscript{22} Students are required to undertake a minimum of 800 hours of mandatory clinical practise (not inclusive of simulation); in order to be eligible to register with the Nurses and Midwifery Board as a registered nurse.\textsuperscript{23} Issues have been identified with tertiary based nursing education including lack of health stakeholder engagement in the design of education, clinical teachers often being unfamiliar with the clinical placement area and students experiencing an unsatisfactory clinical practicum due to short clinical placement schedules.\textsuperscript{24} Rather than spending the majority of their time at one facility as was traditional, when nursing education moved to the university sector, students were placed in a variety of
healthcare settings often for short periods of one to two weeks known as blocks. Research indicates that short block placements do not allow for sufficient time to settle into the clinical setting, influencing nursing students experience of ‘belongingness’. Choice of placement is often chosen by financial and practical factors including availability, with a competitive environment existing amongst universities and Technical and Further Education colleges (TAFE) to secure clinical placements in order to meet the minimum requirements for graduation. Clinical training education has been under considerable stress in recent years due to the health care system having limited capacity to provide adequate quality clinical placements. This is in part due to increased student numbers.

During their clinical placement, nursing students are generally supported by a registered nurse preceptor whose task is to guide and aid learning whilst simultaneously remain accountable for the safety and care of their allocated patients. Research has shown that clinical ward nurses are not always supportive of students. In the literature review undertaken by Birks in 2013, it was found that although it is an expectation that registered nurses have a duty to precept students many are unwilling to do so, and some do not have the knowledge, skills and attitudes suitable for the task. Additionally, it is often the case that students are buddied with multiple clinical preceptors, which does not provide a consistent learning environment.

There is growing awareness that current clinical education models may not provide the most effective learning experiences for nursing students. Nurses, like other health professional groups, being educated in the tertiary sector, are exposed to a system
that traditionally separates theoretical and practical knowledge. In nursing education, the divide between theory and practise is long recognized as being an issue.\textsuperscript{28} Despite the number of practicum hours, it is a common complaint amongst both nursing students and experienced practitioners that there is a significant gap between what is required of graduates and the education they have received in order to be work-ready. Nursing stakeholders agree that graduates need enhanced support upon entering the workforce due to variable levels of practise readiness.\textsuperscript{21}

1.3 Definition of Pain

In order to understand the gravity and breadth of the situation regarding management of pain, some background knowledge into the pathophysiology of pain is useful. While there are many definitions of pain, it is a highly subjective phenomenon and thus cannot be satisfactorily defined, identified or measured by observers.\textsuperscript{29} The classic definition according to the \textit{International Association for the Study of Pain} is that pain is ‘an unpleasant sensory and emotional experience associated with actual and potential tissue damage, or described in terms of such damage or both’.\textsuperscript{30} Pain may be an indicator of tissue damage but may also exist in the absence of any identifiable cause.\textsuperscript{31} It is an individual, multifactorial experience influenced by culture, previous pain experiences, beliefs and moods that influence the sufferer’s ability to cope.\textsuperscript{31} The patient’s response to pain varies greatly as does their degree of disability and response to methods of pain relief.\textsuperscript{32}

While pain can be classified in multiple ways including location, frequency, underlying cause, and intensity; one useful way to classify is according to duration. In 1994 the \textit{International Association for the Study of Pain} (IASP) acknowledged chronic pain as
being distinct from acute pain. Acute pain is generally well understood including its neural pathways and associated analgesic action. It is generally short in duration as wounds or injuries heal, serving a protective purpose and when noxious stimuli are removed the pain resolves. The danger of progressing from acute pain to chronic pain is a risk following surgery, trauma and other conditions with early detection and management of vulnerable patients resulting in a decrease in the overall prevalence. While the pathology is complex and at times poorly understood, chronic pain is defined as pain that persists beyond an arbitrary time period of three months and is considered to serve no protective purpose. Classified differently from acute pain which results from damage to the tissues, chronic pain arises due to neuroplastic changes in the central nervous system and may be defined as either nociceptive or neuropathic. Nociceptive pain results from non-neural tissue damage, while neuropathic pain is the result of damage to the somatosensory nervous system. The third type of chronic pain is idiopathic and may be related to psychological or psychiatric factors. Another useful way often used to classify chronic pain is cancer pain (malignant pain) and pain that is non-malignant, such as arthritis, lower back pain and peripheral neuropathy.

1.3.1 Ethics of Managing and Treating Pain

Not only is it a professional responsibility of nurses to be competent in their area of practise, which often includes the assessment and management of pain, it is also a question of ethics. Leading ethical principles intrinsic to the practise of all health professionals include those of autonomy, beneficence, non-maleficence and justice. Autonomy refers to the patient being able to make his or her own healthcare decisions and is founded on the right of the patient to receive or refuse treatment. All patients
have the right to receive treatment for pain accompanied by clear explanations regarding side effects of all treatments not just those concerning analgesics and have the right to refuse all or part if they so desire.

Beneficence refers to doing good for others. As a profession, nurses have a moral obligation to do right and good, providing comfort and care including managing pain effectively.\textsuperscript{43,44} If the belief of the health professional is that withholding medication was ‘doing good’ due to concerns of drug dependence, addiction or respiratory depression, then there may be the question of whether the nurse was acting in a way that they perceived to be beneficent. One would concur that administering analgesics or performing tasks to minimise pain was doing good, however, if the resulting dosage caused unacceptable side effects, it may be perceived as being at odds with the principle of beneficence.

Non-maleficence is above all, do no harm.\textsuperscript{42} Withholding treatment may be the basis of non-maleficence. For example, if the nurse believes that by giving a certain treatment (such as opioid analgesics) harm will occur, then non-maleficence is being practised.\textsuperscript{45} However the resultant concern is that undertreating a patient who is in pain may cause unacceptable harm ranging from anxiety through to suicide.\textsuperscript{43} Justice predisposes that all patients be treated on a fair and equal basis. This of course, does not mean that all patients receive the same treatment; it must be assessed based on several factors including the physical requirements of the patient. Justice is violated when one group of people receive preferential or privileged treatment as research has shown occurs in the under-treatment of persons in minority groups, particularly those
in remote areas, those from cultural and diverse backgrounds and the Indigenous population. 46,47

With these ethical tenets in mind, it is important that nurses are always cognizant that pain is the most subjective of all human conditions, as only the sufferer can accurately assess the intensity and quality of pain that he or she is experiencing. The International Association for the Study of Pain (IASP) recommends that access to pain management to be a fundamental right of all humans. However, it is Margo McCaffery’s 48 definition of pain first published in 1969, that has provided a concrete guide for health professionals for almost 50 years, ‘whatever the person experiencing the pain says it is, existing whenever the person says it does.’

1.4 Aim of the Study

The aim of this study was to identify the level of knowledge and explore the attitudes in pain management of final semester registered nursing students in selected Western Australian universities, with the goal of informing nurse educators and curriculum developers regarding whether graduates are sufficiently competent in this area.

1.4.1 Research Questions

The research question for this study is-

What is the current knowledge and attitudes of Western Australian final semester registered nursing students undertaking a Bachelor of Science (Nursing) towards patients’ pain management?

Specifically, this study proposed to answer the following questions:

- 1. Is there any statistical difference between age, gender, previous/current
nursing experience, previous training as an Enrolled Nurse (EN), currently working as an EN with the study participants’ current levels of knowledge?

- 2. What are the general attitudes of final year nursing students towards pain management?

- 3. Are any gaps in registered nursing education able to be identified in relation to pain management and what can be done to improve nursing student knowledge and attitudes of pain management?

1.5 Rationale for the Study

With one in five Australians reported to suffer chronic pain during their lifetime and an estimated 80% of people currently living with intermittent pain, studies indicate that many sufferers do not receive the necessary treatment to ease that pain and thereby improve their quality of life. Analysis of the available literature indicates that reasons why patients continue to suffer from inadequate pain management, can be partly attributed to lack of proficiency of both nurses and physicians. Many of these studies have indicated that nurses have a knowledge deficit regarding pain, and possess negative attitudes and misconceptions towards pain and analgesic use. Many have insufficient knowledge concerning basic medication indications, actions and dosages in addition to other pain management interventions.

Other reasons that effective pain interventions are not occurring include the non-recognition of pain as a real disease, not just by friends of the sufferer, family and employers but also by health professionals; misconceptions around pain from all sectors including disbelief that the pain is in fact real; the belief that patients with long term pain experience higher pain thresholds; and issues relating to long wait times to
access services, particularly in rural or remote areas.\textsuperscript{17, 35}

Ineffective pain relief has a flow-on effect of decreased work productivity and/or unemployment leading to increased risks of depression, poor self-esteem, relationship breakdown and social isolation which may in turn further exacerbate the pain experience.\textsuperscript{35} It has been found that many sufferers of one type of chronic pain are at higher risk of experiencing other long-term conditions such as ongoing headaches, irritable bowel syndrome and other functional gastrointestinal tract disorders, additional pain syndromes including chronic back and neck pain, endometriosis, chronic fatigue and painful bladder syndrome.\textsuperscript{50} For example, in the case of a common chronic pain condition, fibromyalgia, it has been found that between 10-30% of sufferers also experience chronic rheumatic disorders.\textsuperscript{50} In some cases effective treatments are available but sufferers simply do not have access to them.\textsuperscript{35}

A strong link exists between chronic pain and low socio-economic status; in particular people of Aboriginal and Torres Strait Islander background and those who are linguistically diverse being at a greater risk of unresolved long-term pain.\textsuperscript{51, 46} In rural Australia the situation is even more serious. Although people are at higher risk of suffering injuries leading to chronic pain, there is a lack of consumer information, understaffing of health professionals and poor access to pain specialists.\textsuperscript{51} It has been found that older adults in particular struggle to receive the correct attention and treatment for long-term pain particularly if they are unable to effectively verbalise it.\textsuperscript{52} Research by Burns et al.\textsuperscript{52} and Devkota et al.\textsuperscript{1} amongst others have concluded that pain assessment is a difficult issue for nurses working with dementia patients with lack
of training being a foremost concern. For those people with pre-existing cognitive
dysfunction such as dementia and behaviour disturbances such as agitation and
aggression, behavioural issues may not only be exaggerated in the face of pain but the
actual pain may pass undetected in the absence of nurses possessing the necessary
assessment knowledge and strategies.\textsuperscript{1,52,53}

Although it has been established that there is an under-treatment of pain and
questionable attitudes exist regarding the sufferers of pain, this study is of significance
as it examines the issue from not just an Australian perspective but also from the
perspective of the undergraduate nursing student. The importance of nurses
recognising and advocating for the patient in pain is an important one in both relief of
the pain itself and for the prevention of further an ongoing health problems. As stated
previously, the aim of this study was to identify the level of knowledge and explore the
attitudes in pain management of final semester registered nursing students in order to
determine if graduates are sufficiently knowledgeable in this area.

1.6 Overview of the Thesis

This thesis has six chapters. This chapter introduces the research question and
provides the background to the topic. It outlines the aim and the significance of the
study, provides a definition of pain and offers insights into what the problems are
concerning pain plus the ethical concerns around the provision of pain relief.
In Chapter 2 the author critically examines the literature. This includes research into
the following areas: learning theory relating to undergraduate learning including
strategies that address ways of learning effective such as simulation and reflective
practise, pain education for undergraduate nursing students, accountability and responsibility of nurses, pain management standards, assessment and management of pain by nurses, consequences of untreated pain, attitudinal barriers of nurses in treating pain, including inadequate treatment of pain, the misuse of opioid analgesics, and pain assessment tools.

Chapter 3 outlines the methodological approach used and provides a rationale for the sequential mixed-methods non-experimental study design. The study population is described as well as methods of recruitment, the ethical procedure and information pertaining to the collection, recording and storage of the data. The survey that was used in the study is described including justification for using the chosen tool. The interview method is described and the way in which the data analysed is outlined. Finally, limitations of the study are discussed.

Chapter 4 presents the results of the study. The demographic data of the respondents are reported, followed by analysis of the survey results. The results of the interview are explained as themes and sub-themes and include quotes from the transcribed interviews.

In Chapter 5 the author discusses the study’s findings and draws conclusions from the quantitative and qualitative analyses. Themes from the interviews are identified and discussed with excerpts from the interviews used to illustrate the findings.

The final chapter provides a description of the strengths and limitations of the study and finally, implications for nursing practise and education and research are offered.
1.7 Summary

Pain management plays a fundamental role in the nurse’s provision of care and as such it is vital that it be taught with enough emphasis, detail and depth to enable that pain control is at an optimal level for all individuals. The aim of this study was to determine the current knowledge and attitudes of Western Australian final semester registered nursing students towards patients’ pain management, to identify any gaps in education in relation to pain management and to examine educational strategies that may help in dealing with this issue.
Chapter 2 Literature Review

2.1 Introduction

This chapter presents a review of the literature relating to the under-treatment of pain. Specifically, literature was reviewed that related to three areas of relevance to the research aims namely:

1. The consequences of unrelieved pain are explored and possible reasons for its occurrence are examined including
2. Attitudinal barriers of health care professionals (HCPs), educational deficits in assessing and managing pain including pharmacological knowledge and a fear of administering opioid analgesics.
3. In addition, the accountability and responsibilities of nurses towards the patients in their care are reviewed including a precis of pain management standards set out by regulatory bodies.

To commence this literature review, teaching approaches and learning theories that apply to adult learners are described and examined in an attempt to determine if and why educational deficits exist in the treatment of pain.

2.2 Search Strategy

In preparation for the study, a literature search was performed using the University of Western Australia’s (UWA) electronic database OneSearch. A targeted search was conducted during the initial research proposal phase in 2016 and repeated periodically throughout the research phase and writing up of results. This was in order to identify and utilise recently published articles, check on currency of evidence and follow up on relevant references identified in all stages. The initial search used the terms “Education of Nurses in Pain Management” and yielded almost 142,000 results. Searches were
then limited to articles published from 2008 to 2018, peer-reviewed journals, full text available online and to articles published in the English language but not to primarily English-speaking countries. This was done for the purpose of easier interpretation of findings. This yielded nearly 29,000 results. The same keywords were used alone and in combination and included keywords and terms (with synonyms and closely related words) including “learning theory”, “pain”, “chronic pain”, “pain assessment”, “pain management”, “consequences of pain”, “nurses’ knowledge, beliefs, attitudes”, “nursing education”, “nursing treatment”, “under-treatment of pain”, “nursing management of pain”, “pharmacological education”, “medication errors” and “pain assessment tools”. Other key search terms included “nursing simulation”, “evidence-based practise”, “reflection”, “reflective learning” and “education and learning theory”.

This reduced the number of articles to approximately 650. The titles of each of the identified articles were reviewed to identify 250 papers that appeared most relevant to the reviews focus and research aims. The abstracts of each paper were reviewed to identify those that presented research into education of nursing students in tertiary settings. The quality of the research undertaken was not evaluated, but each findings were considered against the relevance of the current studies research aims. Both quantitative and qualitative papers were included. Full texts of some me 140 full text articles were retrieved if the study met the research criteria or further investigation of the article was warranted. Scrutinising the reference lists of all included articles identified further studies, which were located and read in greater detail if considered to be of relevance to the study.
A range of grey literature was also examined and kept throughout the study including website excerpts, newspaper articles and Google scholar searches using the same key words to peruse relevant articles, theses, books, abstracts from academic publishers, professional societies, online repositories, universities and other web sites. Statements and guidelines from professional nursing, pain, evidence-based practise and medical organisations, including the Australian Bureau of Statistics, the Nursing and Midwifery Board of Australia (NMBA), the National Health Medical and Research Council (NHMRC), the World Health Organisation (WHO), the Joanna Briggs Institute and the International Association for the Study of Pain (IASP). In addition, information was sourced from a variety of texts and e-books obtained from the internet and from the university and local libraries. The bibliographic software program Zotero (versions 4 - 5) was used to manage citations to format the references in this thesis.

### 2.3 Teaching and Learning in Nursing Education

While pedagogy and andragogy are defined as approaches to teaching, learning theory concerns the process whereby learning occurs; with it being described by Braungart et al. as a “coherent framework of integrated constructs and principles that describe, explain or predict how people learn”. Although the conventional approach for nursing education has been a teacher-centred pedagogical approach, current thinking espouses a more student-centred learning approach emphasising critical thinking and problem solving techniques. Regarded as extremely important in the discipline of education; in nursing training it is used to guide meaningful classroom and clinical teaching and learning. This is important in attempting to understand how and why the
cohort in this study learn and retain theoretical information in relation to characteristics such as age and maturity level. With all three categories having a place in nurse education, behaviourism, cognitivism and social constructivism are learning theories that will be discussed in relation to acquiring knowledge and skills. 56

2.3.1 Behaviourist Approach to Learning

The behaviourist approach to teaching and learning aims to promote and modify observable behaviour, as it considers learning to be achieved by observed acquisition of knowledge or skills. 56, 57 If clear behavioural objectives are set out at the commencement of a task, through repetition and feedback from the teacher, learning should occur. The value of this approach for nursing education is the acquisition of knowledge and in particular clinical nursing skills, as students are reinforced by being given positive feedback when they perform the skill correctly, for example when performing a blood pressure or assessing a patient for pain. 57 However, relying on learning being in response to stimuli promotes extrinsic rather than intrinsic motivation, which is an essential component of cognitive and constructivist learning theories. 57

Behaviourist theory assigns full responsibility to the educator for decisions on what, how, and when learning takes place. Although this pedagogical teacher-centred approach is often regarded as necessary in nursing education due to the vast amount of health care information that nurse educators need to impart, it often results in rote learning of the information rather than meaningful learning that encourages critical thinking skills and transference of theoretical knowledge from the classroom to the clinical area. 59, 59 If learning is primarily focused on response to stimuli, lacking intrinsic
motivation, a student may pay more attention to the physical aspects of the skill itself and the resulting praise and concentrate less attention to the process of critically reflecting on the skills. \cite{45, 48}

This may be of significance for this study as many of the students were in a young age group (under 21 years of age) and pedagogical methods such as behaviourist theory maintains that young learners are often not self-directed. Having limited life experiences, the relevance of extraneous information may not be immediately grasped if it is not directly related to the topic. In addition, young students’ motivation for studying nursing may not be as readily focused or thought out as adult learners who often possess greater intrinsic motivation, for example being goal oriented towards a reward of a better career or more money. Young students’ motivation may be more extrinsic such as pleasing parents or simply passing. \cite{54, 59}

### 2.3.2 Cognitivist Approach to Learning

Both cognitivist and constructivist theories are andragogical approaches to learning. As a guide to teaching and learning, andragogy was popularised by Malcolm Knowles in the 1950s and refers to methods and principles used in adult education. \cite{61} According to Knowles, the goal of adult education should be self-actualisation with the educator’s mission being to assist adult learners to achieve this. \cite{62} Andragogy differs from pedagogy in several key aspects including the motivation behind why the learner desires new knowledge and skills. The theory of andragogy assumes that the learner has a mature personality with previous experiences to draw from, takes responsibility for their own learning and is problem-centred rather than task-centred in their orientation. \cite{61} Most importantly there is an internalisation of motivation that occurs
with maturity; not solely reliant on external motivators such as praise or skill achievement. Motivation is particularly critical in learning, implying that there must be something that the learner wishes to gain.

Cognitive theory views motivation as being intrinsic, with learners motivating themselves to learn. The educator is there to facilitate by providing an environment that allows this to occur. The learner should be able to question and problem solve, using high level critical thinking skills to assimilate knowledge with that previously acquired. Cognitive theory is based on the belief that learning is an internal process focused on thinking, understanding, organising and conscious thought processes grounded in part on exploratory learning. Students move beyond learning skills by rote and begin to understand the interrelatedness of the whole rather than a collection of individual facts. In nursing this is an important skill; not only can the student perform a skill but they can use reasoning and cognitive skills to infer why phenomena may occur. For many clinical skills and interventions, it may be unsafe for students to explore for themselves particularly if it involves direct patient contact, for example acting on assessment data skills without adequate prerequisite knowledge. Although a relevant theory in educational theory, cognitivism has been criticised for neglecting the significance of social factors on perception and motivation. This is of great relevance in nursing education, in particular in professional role acquisition where skills are developed simultaneously with attitudes and behaviours. This has led to the popularity of constructivism as an important learning theory in health education.
2.3.3 Constructivist Approach to Learning

Constructivism in nursing education helps the students to view the world from different perspectives, being particularly important in the development of empathy. Motivation is both intrinsic and extrinsic, as students need to have the intrinsic cognitive drive but also find rewards extrinsically through the sharing of ideas and active investigation. Constructivist theory is also a practical and proactive approach where students construct new ideas based on both past and current knowledge. Constructivism emphasises the collaborative nature of learning; testing of hypotheses occurring through social interaction with a knowledge community. This form of learning is used in nursing education in the form of study groups, tutorial discussions and debriefing sessions. It helps to expose students to different perspectives, strengthening cooperation and collaborative learning.

Role modelling and vicarious reinforcement are important in constructivist theory as students may imitate behaviours and attitudes of those they hold in high regards such as preceptors and mentors. Positive attributes such as safety, integration of knowledge and practise, competence, empathy and the willingness to guide others are all-important in the socialisation of nursing students. Unfortunately, poor attitudes and practises may also be obtained in this manner, especially in those with lower levels of self-efficacy. A literature review published in Australia in 2017 examining 15 relevant articles from 2006 to 2014 revealed that students frequently modelled the behaviour of their mentors, even if the behaviour was poor or dangerous, at times leading to students carrying out unethical or dangerous practises themselves. This is of relevance to this study that aims to explore the attitudes of nursing students.
2.3.3.1 Experiential Learning

Positive and accepting group and participative methods where students take an active role in their own learning is a key characteristic in student centred, andragogical teaching and learning. Learning in this way is often referred to as 'experiential learning'. David A. Kolb, published his experiential learning model in 1984 stating that 'learning is the process whereby knowledge is created through the transformation of experience'. The assumptions that underlie this theory are that learning occurs as a result of thinking about doing. For experiential learning to achieve optimal results, the learning process should incorporate both the experience itself and reflecting upon it. Reflection is a process that actively seeks to deal with problems, with thinking to be directly linked with action. To be effective, it involves the practitioner analysing their experiences to construct an understanding of new or unfamiliar situations. Reflection typically commences with a critical event followed by inquiry; in the case of nursing students, this usually arises from new experiences.

Whilst many students may reflect informally, guided reflection is a structured process using a specific framework that when successfully shared between educators and students assists in the development of both cognitive and motor skills. It is not merely thinking about an experience but actively formulating and testing hypotheses whilst in practise, with reflective practise taking place in the form of journals, verbal sessions, focus groups and debriefing. Qualitative studies reported on in a 2015 literature review by Dubé and Ducharme, found that nursing students benefited from reflective practise regardless of the form in which it was undertaken. It allowed for a heightened self-awareness and change in behaviours including critical thinking.
skills and confidence in using their knowledge in practise. The use of reflection as a learning strategy to help improve the retention of knowledge will be discussed in more detail in chapter five.

Kolb’s experiential learning theory integrates a cognitivist learning approach with an emphasis on the learner’s internal cognitive processes. It is a four stage learning cycle with each stage supporting and leading into the next, with all stages needing to be achieved for optimal learning effectiveness to occur. (Figure 1). In terms of relating this to nursing education, learning is greatly enabled if the knowledge and skills correspond with learners’ existing experiences, encouraging both reflection and the formation of new concepts. The ability to self-reflect has been linked with the belief in one’s ability to perform effectively; this is known as self-efficacy.
2.3.3.2 Self-Efficacy

Defined as the ‘conviction that one can successfully execute the behaviour required to produce the outcomes’, self-efficacy is a concept that is based upon one’s abilities to plan and implement courses of action to produce desired results. Educational research has studied this in depth, finding that an important component of a student’s belief in their ability and self confidence in carrying out professional nursing activities, even in the face of adversity. The relevance of this to nursing education lies in the individual’s belief that they have the capability to know and perform beyond the classroom. In a 2014 review examining articles published from 2000 to 2012 regarding the self-efficacy of RNs, it was established that benefits existed for both registered nurses and nursing students with higher levels of perceived self-efficacy comprising higher levels of clinical competency, goal perseverance and role satisfaction. Various approaches in nursing instruction that have assisted with the development of high levels of self-efficacy include the use of experiential learning, including simulation and reflection and dedicated education units. These will be discussed in chapter five in the discussion section of this thesis.

2.3.4 Learning Theory Summary

All three theories have their place in nursing education; however, behaviourist theory with its emphasis towards a passive style of learning may not be ideal for the integration of clinical skills and knowledge in preparation for practice. Learning approaches that use cognitive and constructivist approaches where students are
taught to think critically may be better suited to nursing education encouraging the integration of theory and practical skills.

Bastable,\textsuperscript{63} acknowledges that learning theories and experiences are not a one size fits all and educators need to be flexible, imaginative and have the ability to motivate whilst simultaneously being positive role models. While the educator is central to the process of guiding and informing and providing material and experiences appropriate and meaningful to the stage of learning, it is the learners themselves who need to have the motivation to set goals and take ownership of their own learning.\textsuperscript{63}

Nicholl and Higgins,\textsuperscript{75} claim that traditional forms of instruction such as lecturing have limited effectiveness these days with the literature suggesting strategies such as experiential learning using simulation techniques, reflective practise and critical incident analysis being more effective. A literature review published in Britain in 2017 as part of research into experiential nursing in nurse education, found that teaching that involved passive methods such as lectures had reason for concern with most learners unable to sustain attention for periods greater than 20-30 minutes.\textsuperscript{76} Figure 2 below gives a concise summary of these theories.
2.4 Readiness to Practise – What is the Accountability and Responsibility of Nurses?

Inherent to the role of the nurse is the tenet ‘duty of care’, with their primary responsibility being to provide care that is both safe and competent. Being accountable for that care means that nurses are answerable to the people they are looking after and are ‘accountable for their decisions, actions, behaviours and the responsibilities that are inherent in their nursing roles’. 19 The above statement is from the glossary of the Registered nurse standards for practise, this being one of the various codes and statements issued by the peak nursing body in Australia – the Australian Nursing and Midwifery Council (ANMC). Their mission statement is to:

‘Protect the health and safety of the Australian community by establishing high-quality standards of nursing and midwifery education, training and assessment’; achieving this through liaising with ‘national and international professional bodies, regulators and educators on matters related to standards
of education and practise’. Documents key to this aim include the *Registered nurse standards for practise* which includes statements pertinent to the assessment and management of pain including:

The registered nurse-

1.6 maintains accurate, comprehensive and timely documentation of assessments, planning, decision-making, actions and evaluations;

2.2 communicates effectively, and is respectful of a person’s dignity, culture, values, beliefs and rights;

2.4 provides support and directs people to resources to optimise health-related decisions;

4.2 uses a range of assessment techniques to systematically collect relevant and accurate information and data to inform practise.

These standards are essential as they guide both the practitioner and the public in understanding the requisite skills and abilities of the registered nurse. To ensure that nursing students are adequately trained, they are assessed under these stringent guidelines; with the responsibility lying with the training institution. For a graduate RN to enter practise they must be deemed competent in assessing, planning, implementing and evaluating quality evidence-based nursing care to a wide demographic. This assumes a ‘readiness to practise’.

A paper presented in 2013 at the *National Nursing Conference* in Australia questioned the practise-readiness of registered nurse graduates. The reality is that many graduates and prospective employers do not believe that graduate RNs are ‘practise-
A number of qualitative exploratory studies in Australia and overseas have further established this. Research published in 2007 from the United Kingdom with 105 participants found that newly qualified nurses often felt ill-equipped to undertake clinical tasks with supplementary support needed in the workplace to enable them to practise independently.

In a 2013 review by the Australian Government Health Workforce it was stated that graduates had considerable variability in their work readiness with up to 50% considered not to be fully ready to commence as a beginning level RN. This was supported in 2014 in a descriptive qualitative research study undertaken with graduate nurse program coordinators from Victoria, Australia. It was acknowledged that while there was limited research on the subject, several areas of weaknesses and challenges for nursing graduates were identified in their preparation for practise, including clinical skill deficits and communication problems.

Similarly, in 2016, an Australian study identified 30 key skills that could be expected of a new graduate finding that efficient and effective communication, professionalism, the ability to provide privacy and dignity to patients and the ability to manage medications being amongst the most important. It was found that there were significant shortfalls in time and opportunity for nursing students to practise these skills in a safe and supportive environment.

2.5 Pain Management Standards in Australia
Individual states and territories in Australia and different practise settings have developed their own policies relating to the management of pain. The National Pain Strategy, first published in 2010 and subsequently reviewed in 2015, has described itself as the ‘first comprehensive initiative in Australia – and worldwide – which sets out to improve the assessment and treatment of all forms of pain’. This document, while largely concerned with chronic pain is also relevant to acute pain, recognising it as the nation’s third most costly health problem. Their mission, goals and priority objectives include the following goals-

1. Recognising and managing people in pain as a national health priority in order to improve quality of life for themselves and their families

2. Creating knowledgeable, empowered and supported consumers who will have the knowledge and confidence to seek appropriate advice, treatment and education in order to better understand and manage pain

3. Train and support skilled professionals in best-practise evidence-based care regarding assessment and management – this includes medical, nursing and allied health professionals

4. Consumers to have access to effectively coordinated interdisciplinary care and support at all levels

5. Quality improvement and evaluation in the area of appropriate, safe and effective pain medicines and technologies

6. Conducting research to identify and address gaps in knowledge and practise, supported by appropriate funding with the findings to be accessible for both practise and policy and also to the consumer.
All of the above involve consumer input, as well as collaboration and communication amongst health professionals.  

*The Australian and New Zealand College of Anaesthetists (ANZCA)* is a professional organisation for anaesthetists and encompasses the *Faculty of Pain Medicine* whose mission statement is to foster ‘safety and high quality patient care in anaesthesia, perioperative medicine and pain medicine’. The *Faculty of Pain Medicine* recognises that pain is a medical specialty in its own right acknowledging that to effectively treat it requires education, training and practise of a multidisciplinary team. Although there are no formal guidelines on chronic pain, the *Guidelines on Acute Pain Management* acknowledge ‘Nursing staff have a key role in the management of acute pain. Appropriate ongoing education and accreditation of relevant nursing staff are essential’. Although the following recommendations are explicitly related to acute pain in this document, they are pertinent to all types of pain:

4.1 Tailoring of treatment regimens to the individual patient requires that regular assessments of adequacy of analgesia and any adverse effects of analgesic drugs or techniques are performed and documented.

4.2 Proper assessment and control of pain requires patient involvement, and measurement using self-reporting techniques, and frequent assessment and reassessment of pain intensity and effect of any intervention.

Although they do not have clinical guidelines directly related to pain per se, all ten of the *National Safety and Quality Health Service Standards* (NSQHS) directly relate to the delivery of safe and high quality patient care and as thus the expectation of a high standard of assessment and management of pain is embedded in each and every one.
In addition, the *Australian Charter of Healthcare Rights* states that all consumers seeking or receiving care in the Australian health system have certain rights, including:

- A right to healthcare,
- A right to safe and high-quality care,
- A right to be included in decisions and choices about care,
- A right to be shown respect, dignity and consideration.

Although written in generic terms in the document, these statements can all be applied directly to the consumer’s expectation that their pain should be assessed, treated and managed in an acceptable and satisfactory manner.

### 2.6 Assessment and Management of Pain by Nurses

While management of pain is ideally a multidisciplinary task, nurses generally spend more time than any other healthcare professional in direct patient care. This includes those patients who are hospitalised, in residential care and other diverse health care settings. As such, nurses often have primary responsibility in assessing pain and should possess the competencies to assess and manage accurately in order to ensure that optimal treatments are administered. The subjective nature of pain means that although pain assessment is one of the most commonplace activities a nurse undertakes, achieving an accurate assessment of it is also one of the most challenging.

As chronic pain is strongly correlated with older age groups, a comprehensive pain assessment and evaluation may be challenging due to many variables, including the person’s cognitive and communicative abilities and their persisting attitudes and beliefs surrounding pain. Assessment may also be exacerbated by polypharmacy and
co-morbidities that mask the true extent of the problem.\textsuperscript{39,92} A number of studies have compared the difference between patients’ and healthcare providers’ assessments of pain and have found that healthcare providers are often sub-optimal estimators of patients’ pain symptoms.\textsuperscript{94}

Assessment involves being able to identify the presence of pain, to measure its intensity and subsequently possess the knowledge and skills to implement the necessary measures to manage it.\textsuperscript{95} Utilising an effective and reliable assessment tool to measure pain is vital to success in accurate assessment. As the cause and characteristics of pain are so varied there may never be a pain assessment tool that is appropriate for every situation. A variety of instruments are used in clinical settings, each having different attributes and applications. Selection may be dictated by the facility or by the characteristics of the intended patient, including tools specific to people with dementia, cancer and other chronic diseases, paediatric patients, gerontology patients and those from culturally and linguistically diverse (CALD) backgrounds.\textsuperscript{96} Pain assessment tools that attempt to capture the full picture include behavioural, impairment and cognition pain scales, in addition to assessment and coping strategy instruments.

Pain is a difficult phenomenon to assess and measure accurately due to its subjective and multifaceted nature, which includes the individual’s personal perception and tolerance levels.\textsuperscript{91,97,98} Nurses need to exercise effective communication skills, engaging in dialogue with those in their care to fully understand their perspective and subsequently deciding together on the most effective method of treatment to address their pain.\textsuperscript{88,89,99} Although not always possible, self-reporting is the most accurate
method for assessing pain type and intensity, and should be performed with an assessment tool appropriate to the patients’ cognitive development, culture, language and understanding, with the same tool being used for subsequent assessments in order to accurately measure change. An optimal pain management strategy should incorporate regular assessments that include location, intensity, quality and onset/duration. This is critical to not only determine the best management, but also to evaluate the effectiveness of previous interventions and to determine if any change to the treatment plan is required. The patient should be asked directly about their pain experience, as voluntary disclosure is not always forthcoming for various reasons, including cultural and personal. If the patient does not have the capacity to self-report, the nurse needs to acknowledge that even though a person cannot express how they feel does not mean they are not experiencing pain.

While self-reporting of pain is ideal, many of those suffering from persistent or chronic pain may be less than reliable communicators of their condition. This is particularly the case when chronic pain impacts all aspects of physical, emotional, and cognitive functioning. This adds complexities and challenges compared with the task of assessing acute pain which is often straightforward. According to Wells, Pasero, and McCaffery, health professionals including nurses claim that the lack of appropriate pain assessment tools is one of the greatest difficulties in achieving adequate pain control. The ideal tool should not only yield an objective measure such as a score but should also be easily administered, understood by the patient and their family and/or carers and also by those administering it. This increases compliance and produces results that are easily replicable. A simple pain assessment tool that measures
pain intensity using a numeric scale rating is most often used due to limitations in resources and time. Appendices 10 and 11 show examples of commonly used pain assessment tools.

For chronic sufferers, pain intensity may be influenced by personal meaning and duration, guided by beliefs, attitudes and expectations as well as emotional aspects such as anxiety, fear and depression.\textsuperscript{107} Many older people may be either reluctant to report pain or report it in place of their true problems of depression and anxiety,\textsuperscript{101} and in Indigenous Australians the fear is that the use of opioid pain relief may be associated with end-of-life care.\textsuperscript{40} It has been found that patients often lack knowledge about effective pain management and may hold the same misconceptions as the health professional.\textsuperscript{108} If the general perception of pain follows the biomedical acute model, when underlying tissue pathology has healed and pain still persists, the patient may believe that tissue damage still exists; this in turn, may interfere with recovery.\textsuperscript{109} A biopsychosocial model that accepts the presence of nociceptive receptors while emphasising the psychological and social aspects may be better suited as a problem-solving approach to regain self-efficacy and promote independence.\textsuperscript{110,111}

\subsection*{2.6.1 Current Pharmacological Recommendations for Pain Relief}

Pain is a multifactorial condition affecting the sufferer both physically and psychologically, making treatment problematic.\textsuperscript{112} While pharmacological management is the mainstay of pain relief, it remains that particularly for chronic pain, it is not always effective. The goals of pain treatment are to improve functional status of the patient, reduce suffering and distress, while simultaneously minimising adverse
effects. While it is unlikely that chronic pain can be eliminated completely, it should be achievable to control pain to a level allowing sufferers to function at a tolerable level. One study found that less than 50% of patients experiencing cancer pain receive effective relief with similar figures cited for acute pain.

The standard approach for pharmacological management of pain was proposed in 1986 when the World Health Organization (WHO) recommended the ‘analgesic ladder’ designed to maintain freedom from pain. This three-step approach stresses the importance of pain-relieving drugs being administered regularly, rather than ‘on demand’ and in response to a pain intensity scale. Recommendations include commencing analgesics with the oral route rather than intramuscular (IM) or intravenous (IV) and including pharmacological adjuvants as required assisting with calming and alleviating fear. Specific analgesic medications include non-opioid analgesics such as non-steroidal anti-inflammatory drugs (NSAIDS), COX-2 inhibitors administering aspirin as well as paracetamol. These should be the first line of medication choice followed by tramadol and opioid analgesics if relief is not achieved. This regime is cited as being inexpensive and 80-90% effective. Recent studies show that using the analgesic ladder can be a valid and effective approach provided that it is used with some flexibility in individual cases. However in some 20–40% of cases of cancer related patients, this regime is not followed and pain still exists.

2.6.2 Opioid Analgesics – What is the Problem?

Relief of pain is regarded as both a fundamental right of the sufferer and a fundamental obligation of the health professional. For many patients, inadequate
treatment and management of their pain is related to the reluctance of healthcare professionals to administer appropriate analgesics. Opioid phobia is an issue that may interfere with optimal pain management. This term refers to the reluctance of physicians prescribing opiate-based drugs with nurses’ also being reluctant to administer them due to perceived adverse reactions. This may be due to fear of addiction or fear of opioid-induced side effects. Although education regarding pain pharmacology has seen some improvement, knowledge deficits and misconceptions, particularly around the use of opioids, continue to inhibit effective pain relief impacting on quality of life.

Given the definition of addiction being, ‘a pattern of compulsive drug use characterised by continued craving for an opioid and the need to use the opioid for effects other than pain relief’, research by McCaffery and Pasero, indicates that less than one percent of patients experience this. If an overcautious approach to opioids is implemented, optimal pain relief is likely to be denied to patients in need and the phenomena of “pseudo-addiction” has been reported as the result of routine under-prescription, when the patient’s demand for analgesics appears to be similar to demands made by opiate abusers. Other studies have shown how fears of addiction, tolerance, sedation and respiratory depression risk have affected nurses’ willingness to implement strategies to manage pain effectively. An observational study undertaken in Melbourne in 2012 in two major teaching hospitals using three-hourly around the clock observations, found that nurses preferred to administer fixed-dose analgesics even if ‘as-required’ analgesics were ordered for breakthrough pain.

For both sufferers and medication prescribers, the use of opioid analgesic is
considered to be the most effective treatment for the relief of pain and reducing anxiety. However the use of opiates for chronic non-malignant pain is controversial due to the interface between legitimate medical use and the risk of abuse and/or addiction. The goal of pain management is to decrease pain and suffering and to enhance quality of life while minimising side effects, despite any history of substance misuse. The dilemma facing prescribers is to achieve a balance between treating pain while minimising abuse, addiction and diversion of opioid analgesic medication. The Substance Abuse and Mental Health Services Administration in the United States reports that many prescribers fear that these drugs will be misused and in fact, research does indicate that 20% of the US population has used prescription drugs for nonmedical purposes. A 2014 report from the National Institute of Drug Abuse also from the United States found that 54% of heroin addicts in that country started out on opioid analgesics obtained from family members or friends who may have initially been legitimately prescribed them for pain relief.

As prescribers of opioids, it is an obligation of physicians that pain is assessed and managed appropriately and ethical prescribing of opioid medications is adhered to in order to minimise the risks including addiction, death from overdose and trafficking of these drugs. While it cannot be predicted who might become addicted to opioids, and it is reported that it only occurs in a small percentage of those who take these drugs, it is necessary that this is closely monitored. Adverse side effects include physical dependence leading to withdrawal symptoms if the drugs are discontinued and some individuals actually experience hyperalgesia; that is exacerbation rather than relief of pain. Other severe side effects reported in a number of studies include
sleep apnoea, sleep-disordered breathing and respiratory depression. It has also been found that most opioid-related deaths in the United States occur in people given prescriptions based on medical guidelines.

Increase in the use of opioid analgesics can be traced back to the late 1990s following an emergent belief that physicians were both undertreating pain and that the risk of opiate addiction was far less than what was previously assumed. Papers published on the efficacy of opioids included those by Portenoy and Foley in 1986, arguing that using opioids for long term therapy in patients with chronic non-malignant pain provides analgesia without toxicity or management difficulties as previously thought. This was backed up by the seminal paper published by Melzack in 1990 entitled *The Tragedy of Needless Pain*.

Advocating for a more aggressive approach to pain control during this period of time were national medical authorities such as the American Pain Society (APS). In 1998 the Veterans Administration (VA) in the United States launched a campaign recommending that pain be classified as the ‘fifth vital sign’. This resulted in pain evaluation becoming a mandatory assessment item accompanying routine vital signs for all health professionals. There were two consequences as a result of compulsory pain assessments; one was that greater attention was paid to it necessitating the need for prompt treatment; the other was that treating pain as a purely subjective experience exposed problems concerning a lack of health care provider education and training in pain diagnosis and management. It was discovered that if pain was treated as a purely sensory experience and not assessed in a holistic manner taking
into account comorbidities and patient variance, then clinicians focused on monitoring and treating all complaints of pain with the end goal of total eradication. The result of this reportedly led to a corresponding rise in prescription opioids and deaths by opioid overdose.\textsuperscript{139,140} Corresponding with the publication of the papers advocating greater use of opiates and the push to assess pain as the ‘fifth vital sign’, the US witnessed a three-fold rise in the use of pain medications and associated deaths associated with opioid analgesics quadrupled between 1999 and 2007.\textsuperscript{109,141}

Partly in response to accusations of contributing to death and addiction by opioid use, the 2016 Congress of Delegates of the Physicians at the American Academy of Family Physicians (AAFP) voted to eliminate pain scores as the ‘fifth vital sign’.\textsuperscript{140} It was recommended that a shift should occur from opioid-based therapy focusing on pain as the ‘fifth vital sign’ to a holistic assessment model that addresses inadequate pain management. This shifts the focus of pain from an entirely drug treatable phenomena to an issue that requires greater health professional education and training in order to comprehensively evaluate, examine and manage pain rather than just rely on opioid-based analgesics.\textsuperscript{142,143}

Considering that the prevalence of chronic pain in adults is reported in the United States to be 40% and in Australia to be estimated at one in five including adolescents and children, it is not surprising that opioids are among the most commonly prescribed medications.\textsuperscript{115,192} In Australia, opioid dispensing increased almost four-fold between 1990 and 2014, although figures remain below those in the US and Canada.\textsuperscript{144} This corresponds with an ageing population and is reported the trend is likely to continue
2.7 Pain Education for Undergraduate Nursing Students

Although international studies have consistently highlighted an inadequate knowledge of pain and inappropriate pain management attitudes in nursing students, the situation in Australia is relatively unknown due to insufficient studies on the topic. \(^{11, 146, 147}\) Research regarding the adequacy of students’ knowledge regarding pain management taught and assessed in Australian schools of nursing is limited, although inadequate knowledge of pain and its management has generally been noted in a variety of different types of published studies. \(^{148, 115, 149}\) If it is discovered that there is currently inadequate education, this may explain why it is alleged that nurses frequently fail to provide optimal care and treatment. \(^{8, 49, 146, 150}\)

To ensure optimal management of pain it is essential that all undergraduate health professionals including nursing students receive adequate education in order to prepare them for future professional roles. \(^{11, 88}\) Despite the plenitude of guidelines and position articles on pain management issued by professional bodies, it appears that specific pain management competencies for entry-level health professional learners have not yet been established. \(^{148, 115}\)

2.7.1 Undergraduate Nursing Students Knowledge on Management and Assessment of Pain

While undergraduate education should provide the foundation for all nursing care, in a large review of nursing textbooks undertaken in 2000 by Ferrell, Grant, and McCaffrey, \(^{128}\) discovered that although the topic of pain was covered, there was inadequate and absent information relating to both the management and treatment of pain and the
integration of pain research into practice. A number of international studies have
examined health professionals’ knowledge in managing patients’ pain and have found
deficits including inadequate education being a major and persistent barrier to safe
and effective pain management. 1,2,39,148,124

A 2003 Swedish study involving 32 nursing students who were assessed in a simulation
situation found that two-thirds of the sample were unable to complete a systematic
pain assessment. 152 While the intensity of pain was most frequently identified,
duration, location and character were often overlooked, as were the emotional and
psychosocial aspects. As this was a simulated setting there may be some discrepancy
in what is actually practised clinically, however, investigators concluded that the
students lacked satisfactory knowledge of pain assessment and there was a
recognisable gap between the theoretical knowledge taught and what is practised in
the clinical setting. 152 In 2011 the American Institute of Medicine stated that despite
the large proportion of time that patients in pain take up in daily practice, many health
professionals are underprepared and uncomfortable with treating pain, due to the lack
of emphasis on pain management in the curricula. 148

A 2011 survey of selected United Kingdom (UK) universities carried out by The Pain
Education Special Interest Group of the British Pain Society revealed that pre-
registration health professional programmes taught an average of only 12 hours on
pain theory, with nursing averaging 10.2 hours. 153 In addition, lectures and case
studies were the predominant teaching strategies used (87.8% and 78.4% respectively)
and student-led approaches such as enquiry or problem-based learning were used in
just 41.9% of cases.  

In 2012-2013, a comprehensive cross-sectional analysis of pain education in 242 undergraduate medical school curricula across Europe was undertaken, also finding that the median hours teaching pain was 12, with no evidence of pain teaching in 7% of the curricula. This study also found limited teaching hours, rote learning and a lack of consistency within and between countries.

According to a study conducted in Ghana in 2014, there were no discrete subjects on pain management; instead, it was integrated into the overall course in subjects such as pharmacology and surgical nursing. Participants in the study felt that there was an inadequate amount of time and attention paid to specific analgesics and reported that there were gaps in the curriculum at all levels of their education.

Studies in both the UK and Canada have found that the assessment and management component of health professional pain education contains far less emphasis than that pertaining to pathophysiology and pharmacology. This may be partly due to education being based on the biomedical model that refers to pain only as a diagnostic indicator of disease or illness. Pathology of chronic pain is often difficult to identify and is frequently non-responsive to treatment, with the consequence being that its gravity may be overlooked.

A 2010 cross-sectional research study conducted over three years of undergraduate education in Auckland, New Zealand, found that nursing students held many
misconceptions regarding adults experiencing chronic non-malignant pain, including that patients possessed high tolerance levels to pain and were at great risk of addiction and dependence.\textsuperscript{17} Another common misconception held by nursing students, graduated nurses and physicians alike is that when they were unable to find objective causes of pain, they attributed the symptoms to psychological causes.\textsuperscript{17,158,159,160} While undoubtedly nurses do play a vital role in improving the quality of life for patients experiencing pain, studies have highlighted that inadequate knowledge, education and experience are major impediments to effective pain treatment. A 2003 study evaluating the pain knowledge of two groups of final year nursing students in Australia and the Philippines (n=150) found that there were low levels of knowledge and gaps in both student groups in terms of knowledge even about basic pain mechanisms.\textsuperscript{125} The published literature supports that knowledge deficits might be effectively addressed by increasing the level of education and training for health professionals both during pre-registration and in ongoing programs, including role clarification for nurses who are often unsure of their responsibilities in this area.\textsuperscript{49,52,88,89}
2.7.2 Medication Errors

The goal of nursing education is for students to graduate with the knowledge and skills required to deliver safe and high quality nursing care. One of the main areas of concern in relation to safety is medication administration, with educational and knowledge deficits existing in relation to medication management and pharmacology. Medications play a central role in healthcare and the literature confirms that as a result of medications being so frequently used they are also one of the most common sources of adverse events. Adverse Drug Events (ADE) are extremely common and while physician prescribing errors are the most usual type of error, nurses still need the knowledge and critical thinking skills to detect these.

The safety report released in 2017 by the Western Australian Patient Safety Surveillance Unit confirmed that while there were 6,445 confirmed medication clinical incidents from 2016-2017, the most common were related to incorrect medication dosage and of those, 12% were related to opioid analgesics. The most commonly cited reason for the errors was communication issues in almost a third of cases. While the rates of ADEs and Adverse Drug Reactions (ADRs) in Australia overall are not exact and may be under-reported, the best available research from recent studies indicates that administration error rates in hospital occur in around 9% of admissions.

The World Health Organization (WHO) has identified lack of therapeutic training and inadequate drug knowledge and experience to be the two most common reasons for medication errors with the education of health care providers being proposed as key strategies in improving safety.
2.7.3 Issues in Pharmacology Education

There are two broad educational approaches for teaching pharmacology in undergraduate nursing education. The first is as a discrete unit or course and the second is to integrate the teaching into other subjects. 164 Studies examining undergraduate students and graduate nurses’ pharmacology knowledge consistently showed nurses have insufficient pharmacology knowledge when they graduate and nursing students have difficulty understanding the subject.165,166

A 2017 study conducted in the United States examined learning barriers and teaching strategies for undergraduate nursing students in the area of pharmacology. 167 A number of barriers were found in this study including content saturation, placement of the course itself, language barriers and lack of appropriate resources. 167 Due to the extensive volume of information required, students felt forced to rote learn in order to pass exams. This behaviourist approach to learning was found to be inefficient with no real understanding of drug actions, side effects and other nursing considerations including dosage, timing and patient response learned. 167 Students reported ‘information overload’ often due to large group didactic teaching styles with limited time spent on supporting deeper learning strategies meaning they often felt unsupported. 167

Foster et al. 167 established that there appeared to be no ideal place for pharmacology to occur in the nursing education curriculum. Placed too early, students cannot relate it to clinical practise; placed too late in the course they are already giving medications with no real understanding of pharmacokinetics and pharmacodynamics. The other
issues identified as barriers are having English as a second language (ESL), which is not uncommon in nursing courses; and not having pharmacology resource material that is appropriately focused towards nursing. 167

Foster et al, 167 identified three separate studies that identified as a challenge for students learning pharmacology is that many lecturers have either insufficient knowledge or display a lack of preparation for teaching pharmacology content. While there were limitations in this study, recommendations of the authors included that pharmacology is taught both in the classroom and in the clinical setting using a variety of teaching methods including intertwining pharmacology with pathophysiology using real patient care situations. 167

A much earlier Australian study exploring the preparedness of undergraduate nursing students undertaken in 2002 found multiple issues regarding pharmacology knowledge.161 Focus groups from four hospitals that included nurses from various capacities including nurse specialists, ward nurses and graduate nurses indicated that overall pharmacology knowledge of graduate nurses including medication family groups and pharmacology terminology was severely lacking. 161 The findings of this study concurred with previous studies that identified deficiencies in undergraduate education in pharmacology but also noted that many experienced nurses also experienced difficulties with pharmacological concepts in clinical practise. 161 Study participants recommended that pharmacology should be taught as a separate subject, however, it was acknowledged for it to be meaningful, it also needed to be a component of lifelong learning and integrated into clinical practise. 161 Although this
study employed a small number of participants, the authors concluded that consolidation of knowledge and practise in graduate nurses was needed to optimise health outcomes for patients. 161

2.7.4 Non-pharmacological Education

While analgesics are no doubt the most effective method of treating pain, combinations of both pharmacological and non-pharmacological pain control methods are recommended as standard nursing practise to offer comfort and pain relief for patients. 168 There are numerous non-pharmacological methods that may be used including distraction, use of cutaneous stimulation (hot and cold) and TENS (transcutaneous electrical nerve stimulation), hypnosis, acupuncture, music therapy and art therapy. 168–171, 172

A literature review published in 2007 in the Netherlands examined 26 cases of non-pharmacological nursing interventions used for patients experiencing pain during burns care finding some evidence for its efficacy with no adverse effects, but also recommended further research should be conducted for confirmation of results. 169 Although few adverse events have been reported in relation to non-pharmacological pain relief methods, their efficacy is questionable. A qualitative study published in Brazil in 2014 examined non-pharmacological methods for reducing cancer pain and concluded there was limited evidence for their effectiveness, citing that more rigorous trials including qualitative studies are required. 172

A report published by the Joanna Briggs Institute (JBI), 173 in 2013 concluded that a comprehensive systematic review was necessary in order to determine the
effectiveness of non-pharmacological nursing interventions in the care of cancer patients. Despite complementary and alternative therapies being commonly used in nursing, published studies related to those therapies used by nurses or nursing students are limited. While the role of non-pharmacological approaches to pain management are evolving, there appears to be considerable scope for further investigation. 90,91,94,95

2.8 Inadequate Treatment of Pain

Inadequate or under-treatment of pain carries with it profound consequences for the person suffering from it. Although it is accepted that pain is whatever the person says it is, and exists whenever they say it does, it is reported that nurses often distrust patients self-reporting of pain, proposing that they have their own belief of how much pain a patient should be in before administering analgesics. 163,164 Pain researchers, Wells, Pasero and McCaffery,177 have commented frequently on the historical under-treatment of pain. They cite research conducted by Marks and Sachar from 1973 as being one of the first studies to report inadequate or under-treatment of pain, with 73% of the 37 hospitalised medical patients under review experiencing moderate to severe distress associated with pain. 26

A 2011 study conducted by Al-Shaer, Hill and Anderson15 at the University of Illinois in Chicago, using a modified version of the Nurses Knowledge and Attitude Survey Regarding Pain (NKASRP) involving 129 participants, found that nurses believed that only 10% of patients accurately rate their pain. It has been suggested that nurses regularly document lower pain scores than those reported by patients, believing that they often overstate their pain; therefore, higher pain ratings are often ignored.
Without pathological or physical evidence including changes in vital signs, health care professionals are less likely to respond positively to reported pain. From this it may be concluded that nurses are reluctant to believe patients’ reports of pain especially if they do not seem correlated with the observed physical symptoms.

Cleeland, Gonin, Hatfield, et al. reported that from 54 oncology centres and 1,308 outpatients with metastatic cancer, 67% reported pain, with 62% of those surveyed stating that their pain was severe enough to impair their activities of daily living, and 42% felt that they had not been given adequate analgesia. Furthermore in 2002, the American Geriatrics Society (AGS) ‘Panel on Persistent Pain in Older Persons’ estimated that 45 to 80% of elderly patients in nursing homes had substantial pain that was undertreated. A number of systematic and literature reviews have indicated that patients with cancer are being undertreated as assessed by the Pain Management Index (PMI) which is a well-validated method of assessing pain control adequacy based on WHO and the Agency for Healthcare Research and Quality (AHCPR) guidelines.

Studies conducted with nurses who had extended contact with patients over a period of time such as in aged, domiciliary and residential settings found that familiarity did not positively affect their judgment on how much pain a patient was in. Wells et al., suggest from the literature that the chance of receiving adequate pain relief when patients experience moderate to severe pain is estimated to be about 50%. A 2014 systematic review of pain assessment tools concurred with this, stating that even
when pain was assessed accurately, the patient still may not receive effective pain relief. Some studies have suggested that obstacles that may increase the likelihood of under-treatment preventing effective pain management include workload pressures when having to assess using lengthy behavioural pain assessment scales, lack of ongoing education and training and poor communication between both the patients and other staff.

It has also been suggested that nurses' confidence in their own knowledge directly affects their perceived competence, thereby further emphasising the need for continuing education on pain and new technologies associated with pain. Although research has shown there are deficiencies in all areas of pain medication management and knowledge, the assessment and management of chronic pain is among the priority needs for Continuing Nursing Education (CNE) or Continuing Professional Development (CPD), with evidence suggesting that graduates are not sufficiently prepared to give appropriate pain care. The task is not only to design effective programs that educate nurses in pain management but also to challenge and educate regarding pre-existing attitudes and beliefs of both patients and nurses about the assessment of pain and the use of opioids, the biopsychosocial nature of pain, as well as the variability of the skills and techniques required to address patients' individual responses to pain. This combined with a multidisciplinary approach to development of plans of care individual to each patient and their circumstances requires clear communication amongst health professionals, the patients, their families and significant others leading to more favourable outcomes.
2.9 Consequences of Untreated Pain

Chronic or persistent pain is a common condition that affects multiple aspects of an individual’s life, with the pain experience having the ability to be the total focus of the person’s existence.\textsuperscript{191} As total eradication of pain may not be achievable, effective pain and symptom management are key elements to increasing quality of life for all sufferers.\textsuperscript{187} Multiple studies have highlighted that inadequately controlled pain, and in particular, chronic pain has significant negative consequences comprising an array of maladaptive physical and psychological outcomes including reduced mobility, sleep disturbances, depression and anxiety, lowered immune function, dependence on medication and reliance on family and caregivers.\textsuperscript{1,5,10,31,40,52,192}

The financial cost affects not just the individual but has major impacts on family, friends and society as a whole. Chronic pain is a major cause of social and economic burden, contributing to decreased productivity and work effectiveness.\textsuperscript{5, 52,157,167} It is Australia’s third most costly health condition, with back pain and arthritis in particular being common causes of unemployment for people aged 45-64, accounting for 40% of forced retirements in 2012.\textsuperscript{105} Linked to low socioeconomic status, well-documented disparities exist regarding assessment, management and treatment of pain in disadvantaged groups.\textsuperscript{105,153,159,195}

Systematic reviews were conducted on 51 studies from Europe, the United States of America and Australia to examine the prevalence of non-cancer and neuropathic pain in order to gain insights on the impact on quality and quantity of life, societal and healthcare costs.\textsuperscript{196} It was affirmed that chronic pain impacts negatively on quality of
life and work as well as being associated with a sedentary lifestyle leading to a shortened life span. 196

Low satisfaction with life is reported in sufferers of long-term chronic pain. A 2010 study conducted in Norway demonstrated that people with chronic pain on long-term social security rated their health-related quality of life as significantly lower than those without pain. 197 Physical limitations set on a person due to unresolved pain may not only have a bearing on their self-esteem but due to its invisibility and unpredictability might also attract societal prejudice and condemnation. 107 To be genuinely ill in the eyes of others, individuals often feel the need to have tangible evidence of illness. However, particularly with chronic pain, there is often a lack of demonstrable pathology.

A 2011 narrative review from Europe found that depression and anxiety resulting from physical stressors such as pain impacts negatively on quality of life. 9 Similarly, a 2012 study with 506 participants using the McGill Pain Questionnaire found that patients with chronic non-malignant musculoskeletal pain (CMP) reported lower life satisfaction compared with the general population in ‘life as a whole’. 198 A narrative review published in 2013 highlighted the impact of individuals in chronic pain who were disbelieved. Three main themes evolved from the study: patients experienced stigma, isolation and emotional distress. 199

Studies indicate that persistent pain profoundly impacts on all body’s systems including the endocrine, cardiovascular, immune, neurologic and musculoskeletal...
systems. Physiological responses by the body in response to pain include increased sympathetic nervous system activity that different body systems respond to in different ways; for example, the cardiovascular system experiences increased cardiac rate (tachycardia), hypertension that leads to an increased workload on the heart and to potential myocardial infarction. Tachycardia also increases the possibility of hypercoagulation leading to deep vein thrombosis (DVT) and pulmonary embolism (PE). Gastrointestinal changes include delayed gastric emptying and potential for development of paralytic bowel and irritable bowel syndrome.

Immobility or restriction of movement from unrelieved pain can also cause a cascade of undesirable outcomes that places patients at increased risk for cardiac and respiratory conditions such as myocardial infarctions, cerebrovascular accidents, deep vein thrombosis, pulmonary embolus, and pneumonia. A study published in 2012 revealed that for patients living with type 2 diabetes, the rates of reported pain were similar to people living with cancer, that is, almost half reported acute and chronic pain, and nearly one quarter reported neuropathy, fatigue, depression, sleep disturbances and physical or emotional disabilities. If chronic pain worsens over time due to disease progression and unsuccessful interventions, evidence suggests that reliance on opioid analgesics may also increase leading to the potential risks and consequences associated with long-term opioid therapy. These include somatic and psychological sequelae incorporating depressive and anxiety disorders, sleep disorders, sexual dysfunction, and delirium.
2.10 Attitudinal Barriers of Nurses in Treating Pain

Research has indicated that although there is an increasing awareness by health professionals regarding pain and its treatment, effective management is not occurring due to a multitude of reasons.\(^{100,131}\) These include limited education on pain theory and inadequate knowledge on assessment and management of pain at both the undergraduate and postgraduate levels; the persistence of myths and preconceived ideas about patients’ pain; inadequate analgesic administration due to beliefs including the risk of addiction and a misunderstanding or non-use of appropriate pain assessment scales.\(^{1,5,9,176,178,182}\) Commonly held myths that persist amongst both laypeople and healthcare workers include concern that treatment with opioids leads to abuse and addiction, pain is necessary for correct diagnosis and that pain is an essential and inevitable component of being ‘human’ and in particular the ageing process.\(^{1,5,10,90,107,168}\)

Research has indicated that many nurses possess attitudinal barriers regarding the control of pain, which can influence their assessment and may result in inadequate treatment.\(^{15,125,126}\) The opinions, values, beliefs and attitudes of the assessing nurse concerning chronic pain influence the assessment and management including the type and amount pain relief that is administered.\(^{191}\) Associated with this are past experiences and perceptions of nurses when assessing patients, communication problems between nurse and patient, nurses’ personal prejudices regarding pain management, differing cultural and belief systems including the patient’s personal beliefs and perceptions of pain and pain relief, language barriers and educational insufficiencies.\(^{5,95,151,179,201}\)
A literature review conducted in 2007 in the UK examining 25 relevant publications analysing post-registration training programs on pain education for nurses and the effect it had on patient outcomes, confirmed that positive results were achieved in several measures of health status including patient experience and perceived control over their own pain. The use of multidisciplinary teams and nurse specialists in pain management also saw vast improvements. A 2009 Australian literature review focusing on pain assessment in dementia patients also found that more extensive training and education is needed for effective assessment and management to occur. This review suggested that approaches to overcome attitudinal barriers held by nurses included getting to know the patient better and knowing through diversity/intuitive perception, education and training, as well as using appropriate assessment tools. Obstacles in assessing patients’ pain are not always directly attributable to the health professional but may also be due to factors such as the patient’s age, illness and communication skills. Both patient and nurse may hold misconceptions surrounding pain and pain management including fear of addiction to medication, which may cause the patient to downplay their pain. Opioid phobia is a phenomenon that patients can experience. This may relate to cultural biases, concern regarding regulatory scrutiny and to a lack of appropriate education regarding pain assessment and management, in particular concerning a fear of side effects and addiction.

Furthermore, if the health professional does not trust the patients’ self-reporting of pain, he or she may not manage it appropriately. While the health professional may possess inadequate or underdeveloped skills in assessment and knowledge of pain,
poor documentation may further impede the task. Recognising and eliminating these barriers may be a crucial strategy in improving pain management. 

2.11 Literature Review Summary

The purpose of this literature review was to inform the current study by providing a general overview of the literature in regard to the ethics, accountability factors and responsibilities of nurses when treating pain. The literature review summarised and critically appraised research and related literature that examined the consequences of untreated pain and the reasons behind its under-treatment. It was discovered that there were definite barriers to effective pain management that interfered with appropriate pain management. These could be categorised as being either healthcare provider related, or patient related.

Health care provider related barriers include lack of knowledge regarding pain management and assessment, poor knowledge base particularly in the area of pharmacological pain management, lack of consistency and knowledge in administering pain assessment tools, attitudinal barriers including fear of addiction and tolerance to opioid analgesics and not trusting the patient to tell the truth in regards to their level of pain.

Patient-related barriers included fear of addiction from opioid analgesics including fear of side effects and addiction. Other common barriers include communication barriers from illness, pain or age, the belief that pain is an inevitable part of aging, and a reluctance to report pain due to not wanting to be seen as a nuisance or the belief that they would not be believed. These issues are relevant to
this study as they attempt to understand reasons why pain is being under treated and contribute to an understanding of the attitudes nurses hold towards patients in pain. The current structure of nursing education, pain management standards and the relationship to readiness to practise were described including perceived barriers in addressing the theory-practise gap in relation to pain management. Learning theory relating to nursing education was identified and described in an attempt to understand the way in which adults learn key concepts in relation to knowledge on pain and its’ management. Different types of learning that have been successfully trialled and been found effective in teaching nursing students were examined including simulation and reflective practise. There was a limited amount of research directly addressing the attitudes and knowledge of undergraduate nursing students on pain particularly, in Australia.
Chapter 3 Methodology

3.1 Introduction

Examination of the literature presented in the previous chapter indicates that the knowledge base of both nursing students and qualified nurses is currently inadequate and that under-treatment of pain is a widespread concern. Despite nurses having notable responsibilities in the treatment of pain, effective management and treatment is not occurring at an optimal level due to a plethora of reasons. Research indicates that this includes limited focused education on pain theory and assessment and management at both the undergraduate and postgraduate levels. 17, 18, 102, 207 This in conjunction with continued preconceived ideas and attitudes around the experience of pain may lead to inadequate analgesic administration. This research, as a response to these findings, focuses on the pain knowledge and attitudes of a small group of Australian undergraduate nursing students to gain both an overview of the issue and to develop an understanding of barriers that may exist in the effective assessment and management of pain. The following chapter describes the methodology used to underpin this descriptive study.

The study design and rationale are presented, as well as the population, sample and the methods used for their recruitment. An explanation is given of the data collection instruments that were employed, how they were administered followed by ethical considerations. The methods used for data collection, recording and storage as well as data analysis are described. A brief background on quantitative and qualitative research is described followed by an analysis of possible limitations of the methodology.
3.2 Research Questions

A group of final semester Registered Nursing students in selected Western Australian Universities were asked to complete a survey to gain an insight into the following research questions:

*What is the current knowledge and attitudes of Western Australian final semester registered nursing students undertaking a Bachelor of Science (Nursing) towards patients’ pain management?*

From the main focus question, other guiding questions and considerations for the research were:

- 1. Is there any correlation between age, gender, previous/current nursing experience, previous training as an Enrolled Nurse (EN), currently working as an EN with the study participants’ current levels of knowledge?

- 2. Explore the attitudes of final year nursing students towards pain management through use of interview

- 3. Identify any gaps in registered nurse education in relation to pain management and what can be done to improve nursing student knowledge and attitudes of pain management?

3.3 Research Design

A mixed-methods, non-experimental design was used to conduct this research. This approach involves collecting, analysing and integrating quantitative (e.g., experiments, surveys) and qualitative (e.g., focus groups, interviews) research. This approach to research is used when this integration provides a better understanding of the research problem than either of each alone. Proponents of this method
agree that the overall quality of a study is improved leading to a more detailed understanding of the investigation than that of using quantitative or qualitative alone.

The validity of the findings are enhanced by examining two types of data in the one study, with the qualitative aspects having the ability to capture data about beliefs and motivations that underlie behaviour that may not be captured in the quantitative phase.

Although there has been some previous research on the subject, the researcher wished to investigate the problem in light of a local student population to expand understanding of the issue as an educational problem. The research was conducted in two phases; the first being the collection of quantitative data using a pre-validated survey tool; and the second phase involving the collection of qualitative data through semi-structured interviews with a sample of self-selected respondents. The interviews were conducted to explore thoughts, comments and explanations from participants to broaden and enhance the perspective and clarify information obtained from the survey.

Nursing paradigms hypothesise that the world may be construed in two ways, either in a positivistic manner where all things are measurable; or in a naturalistic manner that primarily focuses on and explores subjective experiences. Objective measurements through the use of the survey (positivistic) and subjective experiences (naturalistic) were sought to gain a greater depth of understanding of the experience of the respondent. This strategy known as *complementarity* helps to ensure the rigour of this study with sequential mixed method data collection aiding in the validation of one
form of data with the other form. It was presumed that a mixed methods approach would increase confidence in the results of the research as multiple dimensions of the issue could be considered.

### 3.3.1 Data Collection Tool

Data from a previously validated survey and case vignette tool - the *Knowledge and Attitudes Survey Regarding Pain* (KASRP) by McCaffery and Ferrell were used to formulate the results. (Appendices 6 and 7 contain the amended version with the marking key and Appendix 8 has the original version with the marking key). The tool is free of copyright with the authors stating that it may be used and duplicated for any purpose in whole or in part. The tool was used as is with a few minor adjustments including amending to an Australian context in terms of pharmacology and references to the U.S. Advice was sought from local medical professionals and academics regarding modification of the tool. Questions omitted from the original tool included one pertaining to paediatrics as the researcher wished the research to focus predominantly on adult patients; question nine of the original KASRP was modified to exclude the drug hydroxyzine as it was not as commonly used in Australia; similarly question 17 asked about another drug (*Vicodin*) uncommonly used in Australia. In the multiple-choice section, question 26 was omitted as it related to post-operative pain whilst the bulk of the questions were relating to chronic pain. No changes were made to the case study after review by a small group of local registered nurses and educators.

The tool is derived from current standards and guidelines of pain management including those from the American Pain Society, the National Comprehensive Cancer...
Network and the World Health Organisation, with pain experts establishing its content validity. Reliability refers to the degree to which an assessment tool yields consistent results, while validity relates to whether a tool measures what it is supposed to measure. Construct validity of this tool was established by comparing scores of nurses at various levels of expertise with the tool being successful in discriminating between the levels. The reliability of the KASRP tool was demonstrated in terms of test-retest reliability, established by repeated testing of a class of 60 nurses and was found to be \( r > .80 \). The internal consistency was determined (alpha \( r > .70 \)) with items reflecting both knowledge and attitudes. McCaffery and Ferrell recommended analysing the data in terms of the percentage of scores as well as analysing individual items. This means that the items with the least amount of correct answers could be used to guide educational needs. When the tool was originally developed, no acceptable pass mark for the survey was predetermined, however in later studies a pass score of 80% was set. It was also envisioned that the tool not be differentiated into knowledge and values categories as many of the questions measured both.

The modified KASRP contains 36 items - 20 true/false questions, 10 multiple-choice questions and two patient case vignettes where the respondent was asked to make decisions on analgesic administration following rating the patient in regard to their pain score. The case scenarios were identical, apart from the patients’ facial expressions and behavioural expressions of pain. The purpose was to discover the students’ knowledge and attitude in regard to postoperative pain assessment and decision-making ability regarding sliding scale analgesic administration.
Much of the research investigating knowledge and attitudes on pain in nurses has been utilised the KASRP. \(^{214,222}\) Originally developed in 1987, and revised in 2008, it has been used in several settings and tested in pain education courses over the years to assess nurses' knowledge and attitudes related to pain.\(^{213}\) A comprehensive literature search conducted in 2016 by Ung, Salamonson, Hu and Gallego \(^{18}\) found that from 26 studies using 14 different instruments to assess knowledge and attitudes to pain management, the KASRP was the main instrument used in nine of them. Although other instruments have been used successfully to research the phenomena, and it was acknowledged there was no ‘gold standard’, the KASRP was found to have an internal consistency and validity rated as high.\(^{18,222}\) The KASRP was chosen as it has a clear distinction between questions that measured both knowledge and attitudes. Although no formal tests for validity and reliability were carried out, the revised survey was reviewed by a number of final year registered nursing students (not involved in the research), currently practicing registered nurses and registered nursing lecturers.

3.4 Study Population

The target population was final semester undergraduate Registered Nursing students from two Western Australian (WA) Universities prior to their final clinical practicum. In WA there are four universities offering Bachelor’s degree qualifications to become a registered nurse. In total there 34 universities in Australia offering this qualification each year, although some of these have multiple campuses in both their own state of origin and in other states and territories.\(^{214}\) In 2017, Edith Cowan University graduated 376 students from their Bachelor of Nursing program \(^{215}\) while the University of Notre Dame Australia graduated approximately 220.
Whilst there are limited statistics available regarding the student RN population in Western Australia, a Labour Market Research Report regarding nurses in Australia released in 2017 reported that there were 9,600 bachelor degree completions in 2015; and statistics from the Nursing and Midwifery Board, report that in 2016 when this study was undertaken there were 28,905 RNs registered with the Board and of these only 10% were male. According to the Australian Institute of health and Welfare, the average age of employed nurses and midwives in 2015 was 44.4 years. Of interest on the University Review website, both of the universities in this study ranks in the top three nursing schools in Australia for 2017, with the University of Notre Dame Australia gained an 89% satisfaction rating from 1890 students and Edith Cowan University gaining 86% from 2340 respondents. Although three of the four universities were contacted with details of the study, permission was only obtained two.

Review of each of the two university’s nursing curriculum showed similar units of competence in all compulsory subjects in the undergraduate degree. Analysis of the unit descriptions revealed no specific units of competence relating solely to pain and its management. Several unit descriptions included statements pertaining to students gaining knowledge and skills in performance of nursing health assessment including physical examination and management of function, in addition to using drugs safely in the treatment of medical conditions.
3.4.1 Recruitment

A letter of introduction explaining the research project was sent to the heads of nursing at three Western Australian universities; however only two gave consent within the set time frame. The letter outlined the purpose of the study, the commitment required of each student and methods for ensuring the participants’ anonymity and confidentiality. It also informed that the results might be published. (Appendix 2).

The head of the school of nursing at each university was subsequently contacted to discuss the proposed research and to identify appropriate and effective recruitment strategies. A similar strategy was agreed upon for both universities. The researcher made contact with the research unit coordinator who agreed to make time during a lecture or classroom teaching session to distribute the research surveys to the students. The department heads asked to be informed of the results of the study in order for possible guidance of future course content in the research area. Students were advised of the research project during their research unit tutorial session and were advised that although it was not compulsory, completing the survey would not only assist the researcher in conducting this study but would also aid them in learning more about the procedure of data gathering. Surveys were completed in the classroom under the supervision of the lecturer. Appendices 3 (Participant Information Form), 4- (Participant Consent Form) and 5 (Demographic Data)- were given to the students to read before they made the decision to continue with the questionnaire. This complied with informed consent principles.
3.5 Ethical Procedure

The research received Ethics Committee approval from the University of Western Australia Human Research Ethics Committee (HREC RA/4/1/8069) (Appendix 1). Formal approval was obtained from the Head of School of Nursing and Midwifery at Edith Cowan University and University of Notre Dame Australia prior to data collection.

In accordance with the National Statement on Ethical Conduct in Human Research participants were informed that their participation was voluntary and that they could withdraw from the study at any time without penalty. Students were also informed in Appendix 3 – the participant Information Form that “You have the right to withdraw your consent to participate at any time during the research. You may withdraw at any time without reason and without prejudice. As a participant of this study there will be no impact on your university course. If you are willing to consent to participate in this study, please complete the attached consent form”. This made it quite clear that they were under no obligation to complete it. This complies with the principles of autonomy meaning that students had the right to choose for themselves if they would participate in the research project.

Respondents were informed that all information provided through the completion of surveys would be treated as strictly confidential and would not be released by the investigator. This information was repeated in appendices 3, 4 and 5. They were also informed regarding the nature and purpose of the data to be collected and what was to be done with the data upon completion of the research. In addition, respondents were informed that if any research data gathered for the study were published, the names or other identifying information of the participants would not be used. When
writing up the interviews, students’ names were also changed to protect their identity.

3.5.1 Researcher background

Although the researcher has been a long-standing nurse educator, there is no personal or professional association with either of the universities who gave their consent for this research to be carried out.

3.6 Data Gathering Methods

It was decided by the researcher that the most effective way to investigate the knowledge and attitudes of final year nursing students was by the use of this survey as this would be an efficient and timely method in which to collect data including information about knowledge, beliefs, attitudes and behaviour.223,224 The Oxford English Dictionary defines a survey as ‘a formulated series of questions by which information is sought from a selected group, usually for statistical analysis’.225 As the questions in this data collection method are consistent, it was surmised that there was a better chance of gaining reliable data and that the findings could be generalised to the larger population.

The information packs and surveys were sent by mail as hard copies to the coordinators for the research units who distributed them to the students. It was decided to use a paper-based method of administering the survey as it was anticipated that if it was given out in class time, students were more likely to complete the survey. Although it was probable that most of the participants would be comfortable with internet-based surveys, there was a higher chance that unless directly supervised they would choose not to undertake it. Studies have indicated that significantly higher
response rates are gained when respondents are asked to fill out a paper-based questionnaire compared with web-based questionnaires.\textsuperscript{226–229}

Students were provided with an information pack, which contained an information sheet (Appendix 3), consent form (Appendix 4) and the \textit{Knowledge and Attitudes Survey Regarding Pain} (KASRP) survey (Appendix 5). To support the credibility of the research, a PDF document was created using the official letterhead of the University of Western Australia and was used on all forms. All respondents were allocated a unique code, which included the university initials for cross-referencing to be carried out.

To encourage participation the lecturer explained the purpose of the study as described by the researcher and asked each student to fill out the survey during class time. Students were informed that participation was not compulsory. Those students who agreed to participate were asked to return the pack by dropping it in a sealed box at the end of the lecture. By reading the requirements outlined in the letter, signing and agreeing to the survey and electing to be involved in a follow up interview, respondents gave their consent. This ensured that consent to participate in the study was informed. Considering all respondents were in the final year of a three-year degree course, it was presumed that all were over the age of 18 years and therefore parent/guardian consent was not required.

A page for demographic data was attached to the front of the survey. The information requested included age, gender, previous experience in healthcare, whether they were currently working in healthcare and in what role, how many years they had worked in healthcare, whether they had an Enrolled Nurses (EN) qualification, and had they
worked in that role, currently or in the past. The researcher requested the
demographic characteristics to explore potential differences in the knowledge and
attitudes of the groups.

The paperwork was retrieved by the university lecturer that day and returned to the
researcher via a stamped self-addressed envelope. The consent sheets contained the
students contact details as they were asked if they would consent to a follow up interview. The recruitment was conducted entirely by mail and the
information pack (containing the information sheet, consent forms, activity worksheet,
survey, reply-paid envelopes). Six interviews were carried out after the completion of
the questionnaire. One interview was conducted face to face and the other five were
conducted over the phone with the researcher informing and asking permission for
them to be recorded. The researcher reiterated at this time to the respondents that
the information would remain confidential and any specific responses used would be
de-identified. All interviews were greater than 20 minutes in length with mean time
being 21 minutes

3.7 Recording and Storage of Data

During the course of the study, transcripts and copies of digital data were kept on a
USB, which is currently stored in a locked filing cabinet. All the data were managed on
the researcher’s personal laptop. The security and protection of the data were
maintained by means of a username and password. At the conclusion of the study, in
accordance with NHMRC regulatory guidelines, the researcher will permanently delete
all materials from the hard drive of the computer used to store and analyse the data.
Electronic materials will be stored electronically on USBs and securely stored with hard
copies of the research materials for the seven-year period as prescribed by the
NHMRC. After the mandatory storage period, the materials will be destroyed.

3.7.1 Interviews

While the initial part of the study was to determine the students’ base knowledge of
pain management, treatment and attitudes; the goal of the second part – the semi-
structured student interview was to explore values, attitudes and feelings in greater
depth as well as discovering the depth of knowledge that participants believed they
possessed. One of the areas that the researcher sought to explore during the interview
was not only how they participant viewed their own level of knowledge but also where
they believed they had gained most of their knowledge.

As part of the survey, all respondents were asked if they would be willing to participate
in an interview. Only students who consented to a follow up interview on the consent
forms given out with the questionnaire were contacted. From this group of six
students, were contacted and interviewed. It was hoped that follow up interviews
could have been carried out face-to-face but only one student was able to be done this
way, the others were carried out via telephone. All were audio recorded with the
respondent’s permission. Sample interview questions developed by the researcher
were used to guide and prompt the interviewer. These questions were derived from
the focused research and the survey questions. (See Appendix 9)

The semi-structured interview approach was selected as questions could be prepared
ahead of time but new ideas can be generated throughout the interview as a result of
what the interviewee divulges. Valuable new information can be gathered which could
not have been divulged in the survey. This type of data collection is flexible with a greater ability to explore themes and patterns that may have been missed in a questionnaire or survey. However these interviews are time-consuming as they are not standardised and interviewer effect needs to be taken into account, that is, it may be influenced by subjective bias of the interviewer or interviewees may respond as they think the interviewer wishes them to. This research was conducted on one occasion only as it was presumed that participant attrition rate would rise once participants had finished their nursing course.

3.8 Data Analysis

Data analysis refers to the collecting and organising of data so that a researcher can come to a conclusion and make sense of the data received. From the information collected using the KASRP, quantitative data was entered into IBM Statistical Package for the Social Sciences (SPSS Version 24) and were initially analysed using descriptive statistics to summarise and depict quantitative descriptions of both the demographic variables and the outcome variables. As the data was primarily ordinal and nominal with some interval data, the SPSS application was chosen, as it is an efficient way to analyse descriptive and inferential statistics and generate graphs. Different data analysis methods were used to confirm the results from one method with the results from another. Studies have found that the utilisation of two different research methods can decrease weaknesses of a single method and strengthen study outcomes by providing rich and comprehensive data, with rigorous analysis of the data generated by interview being critical to generating trustworthy evidence. Statistical analysis of the numerical data was elicited from responses to the KASRP and a qualitative content analysis of the interviews was undertaken to help to explain the
findings.

3.8.1 Demographic Data Analysis

At the commencement of the survey, demographic data was requested to elicit the demographic profile of the respondent. This included age, gender, previous work experience in the health industry, if the student had a previous healthcare qualification and if so whether it was obtained overseas, whether the student was currently working in the health industry and in what role, if the student was currently working as an Enrolled Nurse (EN) or if they were an EN but had not worked in the role. This was relevant as the scope of practice for Enrolled and Registered Nurses have many overlapping elements. These questions were asked to find if there were any statistical differences between the different groups within the cohort.

Univariate descriptive statistics (frequencies and percentages) were used to describe the nominal demographic data and the ordinal survey responses to the true and false type and multiple choice questions. The total scores for each part of the survey (out of 36) were converted to a percentage. A Q-Q Plot and Shapiro Wilk Test for the Total combined score, and Total True/False and Total Multiple choice scores were conducted to test for Normality of the data.²³⁴

Only the Total True False scores resulted in a non-significant result (p=0.172) indicating it was not significantly different to the normal distribution. All other variables demonstrated significant Shapiro Wilks tests indicating their distributions were significantly different to the normal (p< 0.05). Therefore, parametric inferential statistics were only used to analyse the normally distributed data (Total True/False)
and nonparametric statistics were used to analyse the remainder (Mann Whitney U test, and Kruskal-Wallis test).

3.8.2 Quantitative Data Analysis

Quantitative data refers to data that is collected in a quantified or numeric form. The percentage of correct answers of the KASRP was calculated for each of the returned surveys (n=55). This was achieved by assigning a value of ‘1’ to each correctly answered item and a value of ‘0’ to each incorrectly answered item for each of the 36 individual items in the KASRP. The data were analysed question by question for the three sections of the KASRP (true/false, multiple choice and case-study); to examine each individually.

The lowest and highest scoring questions on the KASRP were examined and displayed in tabular form. As was recommended by the authors, questions with high numbers of incorrect answers were further investigated to discover if there was any common theme or area for concern. The results chapter will provide a comprehensive description of the results and findings.

3.8.3 Reliability Analysis

Kuder-Richardson test is used to measure the internal consistency of a scale using binary data estimating how consistently learners respond to items within a scale. This statistical test is performed as an index of reliability to determine if a measure or scale produces similar results under consistent conditions. A reliability co-efficient of 1.00 points to perfect reliability, therefore researchers wish to get as close to this score as possible. The Kuder-Richardson test was used to check for internal
consistency on the 36 questions contained within the survey.

3.8.4 Qualitative Data Analysis

Qualitative research involves the collection, analysis, and interpretation of data that are not processed into numerical data but are instead extrapolated to relate to people’s empirical understandings of the world and how they operate and learn within it. \(^237,232\) Data analysis in qualitative research is defined as systematically examining and organizing interview transcripts, observation notes, or other non-text source materials in order to increase the understanding of the phenomenon under study. \(^237,239\)

Qualitative research is commonly used in the social sciences and in the applied fields that derive from them, including nursing. \(^238\) Interviews are a common way to collect qualitative data as they allow for interactive dialogue between the researcher and the participants. \(^209\) The researcher undertook interviews with participants and collected the interview data by recording or writing down responses at the time of interview. Following interview, transcription was carried out verbatim in order to examine the responses in order to develop themes and categories. \(^239,240\)

Specific knowledge questions were not investigated in the interviews as the researcher felt this was sufficiently covered in the survey. The focus was more on the respondents’ views and opinions on the level and depth of education they had received on pain assessment and management, where they had received the greatest depth of understanding and what attitudinal values regarding pain they themselves possessed or had witnessed in other registered nurses. Because qualitative research is ‘often criticized as biased, small scale, anecdotal, and/or lacking rigor’; \(^238\) it was
important to the researcher to carry out the interviews in an informal, non-threatening manner to encourage candor and honesty.

Each interview commenced with introductory and background general questioning including where the respondent was currently working and if they had worked while they were a student. Respondents were asked about:

- Prior and current experience in healthcare
- Experience in pain management before starting and during the course
- Rating of their knowledge on pain assessment and management, reason why they gave that score, and where they gained most of their knowledge on pain

Respondents were asked specific questions on where they gained their knowledge including:

- Recollection of pain education during their undergraduate course including where it fit in within the overall course and what was the focus of the education
- If they thought they had had adequate education on pain
- Knowledge on different features and types of pain and its treatment – e.g. chronic vs. acute pain/ pharmacological vs. non-pharmacological therapies and methods of treating pain
- Barriers to treating pain including the use of non-pharmacological therapies and attitudinal barriers of assessing nurses

Once these questions had been explored the researcher reminded respondents of the case study scenarios and investigated the following:
Rationales for rating pain scores and the amount of analgesic medication that they suggested

To facilitate analysis of the data obtained from the interviews, the researcher looked to a process outlined by Braun and Clark, termed thematic analysis. Thematic analysis is a commonly used method of analysis used in qualitative research, used to identify, analyse and report patterns or themes within data in relation to the research question. The first step was becoming familiar with the data. This involved the researcher transcribing the audio files of the interviews into written text reading and checking the recordings and text multiple times to ensure accuracy in content and to gain a general sense of the overall meaning.

In the second phase, key terms, phrases and captions were highlighted and notes written in the margins of the transcripts while reading them. This was the initial coding of the data into categories to generate descriptions of the themes. The aim was to capture both commonalities and variation across participant response. Repeated revisiting of the recorded data allowed for checking of the emerging themes, whilst remaining true to the participants’ own words.

The third phase involved organising the codes into thematic categories. This was carried out by cutting and pasting text extracts and themes into a table and then by making a thematic mind map. This helped to visualize the relationship between themes, sub-themes and codes. The researcher conferred with her supervisor to discuss the appropriateness of the themes. The qualitative results were believed to be
credible due to the repetition of information and themes from the six interview participants.

The fourth and fifth steps involved reviewing the themes and defining and naming them before writing up the final report. This involved using excerpts from the transcript to support the qualitative data being reported upon. Verbatim extracts from the participants increased credibility of the chosen themes. The findings were validated by corroborating evidence through triangulation of the data from different sources, and through peer review and a debriefing of the data and research processes with the researchers supervisor. The results chapter will provide in detail the results of this analysis.

3.9 Limitation of Chosen Methodology

Limitations of the chosen methodology included the small number of respondents in the initial survey and in subsequent interviews. One of the most frequently cited disadvantages of surveys is the low response rate, with the smaller the rate of return the less reliability being placed on the findings. Although the KASRP has been well developed and validated, standard responses are limiting and with such a small number of respondents agreeing to follow up interviews, a full and comprehensive picture may have been lacking. In hindsight, it may have been helpful to have separate research questions/aims for the two phases of the study in order to make the study more concise and focused.

3.10 Summary
The reasons for choosing the research design, population sample and the data collection instruments have been outlined in this chapter. In addition, implementation of the data collection tools, the process of data analysis, ethical considerations and limitations of the study were described. The participants were Bachelor of Science (Nursing) students from two Western Australian universities prior to their final practical placement in 2016. The data collection instruments consisted of the KASRP followed by open-ended interviews. The results of these procedures will be described in Chapter 4.
Chapter 4 Results

4.1 Introduction

The primary purpose of this study was to investigate the question - What is the current knowledge and attitudes of Western Australian final semester registered nursing students undertaking a Bachelor of Science (Nursing) towards patients’ pain management?

This chapter reports the data collected and the statistical analysis of that data. Key aspects of the findings are emphasised. The quantitative results from the KASRP survey are discussed first followed by the qualitative findings from the semi-structured interviews. The results are presented in the form of tables and as a discussion. The demographics of the sample and performance on the survey are described followed by a comparison of correctly and incorrectly answered survey items and the demographic variables of age, gender, university attended and previous experience of the participants.

4.2 Characteristics of Sample

The final sample size was 55 students. The demographic data included age, gender and whether they had previous and/or current experience in healthcare. Of the respondents, 76.4% were female and 16.4% were male with the remainder not identifying a gender. This data is contained in Table 1, which shows that more than half the sample (58.2%) was aged between 20-23 years, with the majority of the respondents (76.4%) under 30 years of age. Over two-thirds (67.3%) had no experience working in healthcare previous to undertaking this course of study, however nearly half (47.5%) were currently working in healthcare related roles at the time of the
survey. A small number of students had previous training in healthcare before coming to Australia. It was not revealed in this research study what the qualification was and why they were not working in this role.

Table 1: Demographic Characteristics of the Sample of Registered Nurse Students (n=55)

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 20</td>
<td>3</td>
<td>5.5%</td>
</tr>
<tr>
<td>20-23</td>
<td>32</td>
<td>58.2%</td>
</tr>
<tr>
<td>23-30</td>
<td>7</td>
<td>12.7%</td>
</tr>
<tr>
<td>Over 30</td>
<td>8</td>
<td>14.5%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>76.4%</td>
</tr>
<tr>
<td>Male</td>
<td>9</td>
<td>16.4%</td>
</tr>
<tr>
<td>Missing data</td>
<td>4</td>
<td>7.3%</td>
</tr>
<tr>
<td><strong>Previous experience in healthcare</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>30.5%</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>67.3%</td>
</tr>
<tr>
<td><strong>Overseas qualification in healthcare</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>6.8%</td>
</tr>
<tr>
<td>No</td>
<td>51</td>
<td>86.4%</td>
</tr>
<tr>
<td><strong>Country of qualification in healthcare</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>5</td>
<td>8.5%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>6.8%</td>
</tr>
<tr>
<td><strong>Currently working in healthcare</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>47.5%</td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>45.8%</td>
</tr>
<tr>
<td><strong>EN – Qualified and never worked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>3.4%</td>
</tr>
<tr>
<td><strong>EN – Qualified and worked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>10.2%</td>
</tr>
<tr>
<td><strong>Years worked in healthcare</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>36</td>
<td>61.0%</td>
</tr>
<tr>
<td>0-1</td>
<td>4</td>
<td>7.4%</td>
</tr>
<tr>
<td>1-2</td>
<td>5</td>
<td>9.3%</td>
</tr>
<tr>
<td>4-5</td>
<td>3</td>
<td>5.6%</td>
</tr>
<tr>
<td>5 or more</td>
<td>6</td>
<td>11.1%</td>
</tr>
<tr>
<td><strong>Current healthcare role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aged care worker</td>
<td>4</td>
<td>14.8%</td>
</tr>
<tr>
<td>Allied health</td>
<td>1</td>
<td>3.7%</td>
</tr>
<tr>
<td>Assistant in Nursing</td>
<td>11</td>
<td>40.7%</td>
</tr>
<tr>
<td>Other (e.g. receptionist)</td>
<td>3</td>
<td>11.1%</td>
</tr>
<tr>
<td>Enrolled nurse</td>
<td>8</td>
<td>29.6%</td>
</tr>
</tbody>
</table>
4.3 Descriptive Statistics

The findings from the Knowledge and Attitudes Survey Regarding Pain are presented in three sections then the overall score. Although they are not three different sets of knowledge that was being tested, it was decided by the researcher that presenting in this manner would make understanding of the data easier to read and interpret.

- Section one comprises 20 true or false statements – questions 1-20.
- Section two comprises twelve multiple-choice questions for which the respondent was to choose one response - questions 21-32.
- Section three comprises two patient case studies. For each case study there were two questions regarding pain assessment and dosage of analgesic administration – question 33-36.

The data is presented in the form of tables with key findings highlighted in the form of a discussion.

4.3.1 Frequency and Percentage of Test Scores on the KASRP - Total Survey Scores

When analysing the data the authors of the KASRP did not intend that questions should be differentiated into those that measure pure attitude and those that measured pharmacological knowledge as it was perceived that many items measured both aspects. This was regarded as particularly true when it came to questions concerning addiction. With this in mind, the data has been analysed in terms of complete scores including questions that scored the most and least amount of correct responses as well as looking at questions individually for patterns.
From a possible total of 36 correct answers to achieve 100%, correct responses ranged from 17 correct to 35 correct showing a variance of 14.53 with the median of 23 and standard error of 1.1. From this it can be seen that 23 out of 36 was the most common score with nine or 15% of the respondents achieving that score. This equates to 64% correct. McCaffery and Ferrell did not indicate a pass score in the original development of the tool; nevertheless, later studies set a pass mark of 80%. Only three respondents achieved over 80%, with 14% (n=8) respondents achieving 50% or lower.

Table 2 is presented as follows. Column one displays the scores achieved by respondents as a number score out of 36 and column two displays the same score as a percentage. Column three shows how many of the survey respondents achieved that score (frequency) and column four is that number as a percentage (percent); this score takes into account missing scores. The difference between the percent column and the valid percent is that ‘percent’ takes into account missing scores whilst valid percent does not include missing scores. Cumulative percent adds the percentages from the top to the bottom to arrive at a 100% score. The results support the conclusion that this group of nursing students possesses inadequate knowledge regarding pain and pain management as measured by the KASRP.
Table 2: Frequency and Percentage of Test Scores on the KASRP

<table>
<thead>
<tr>
<th>%</th>
<th>Score / 36</th>
<th>Freq</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>17</td>
<td>4</td>
<td>6.8</td>
<td>7.3</td>
<td>7.3</td>
</tr>
<tr>
<td>50</td>
<td>18</td>
<td>4</td>
<td>6.8</td>
<td>7.3</td>
<td>14.5</td>
</tr>
<tr>
<td>53</td>
<td>19</td>
<td>4</td>
<td>6.8</td>
<td>7.3</td>
<td>21.8</td>
</tr>
<tr>
<td>56</td>
<td>20</td>
<td>1</td>
<td>1.7</td>
<td>1.8</td>
<td>23.6</td>
</tr>
<tr>
<td>58</td>
<td>21</td>
<td>4</td>
<td>6.8</td>
<td>7.3</td>
<td>30.9</td>
</tr>
<tr>
<td>61</td>
<td>22</td>
<td>4</td>
<td>6.8</td>
<td>7.3</td>
<td>38.2</td>
</tr>
<tr>
<td>64</td>
<td>23</td>
<td>9</td>
<td>15.3</td>
<td>16.4</td>
<td>54.5</td>
</tr>
<tr>
<td>67</td>
<td>24</td>
<td>7</td>
<td>11.9</td>
<td>12.7</td>
<td>67.3</td>
</tr>
<tr>
<td>69</td>
<td>25</td>
<td>6</td>
<td>10.2</td>
<td>10.9</td>
<td>78.2</td>
</tr>
<tr>
<td>72</td>
<td>26</td>
<td>6</td>
<td>10.2</td>
<td>10.9</td>
<td>89.1</td>
</tr>
<tr>
<td>75</td>
<td>27</td>
<td>2</td>
<td>3.4</td>
<td>3.6</td>
<td>92.7</td>
</tr>
<tr>
<td>78</td>
<td>28</td>
<td>1</td>
<td>1.7</td>
<td>1.8</td>
<td>94.5</td>
</tr>
<tr>
<td>81</td>
<td>29</td>
<td>1</td>
<td>1.7</td>
<td>1.8</td>
<td>96.4</td>
</tr>
<tr>
<td>97</td>
<td>35</td>
<td>2</td>
<td>3.4</td>
<td>3.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>55</td>
<td>93.2</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Missing System 4 6.8
Total 59 100.0
4.3.2 Highest and Lowest Scoring Questions of Section 1 - True/False Section

The three sections of the survey have been separated for ease of comprehension and highest and lowest scores identified. The true/false section is presented here. Of the 20-true/false questions, the mode was 13, the median 14 and the mean score was 14.32. The data displayed a normal distribution with the SD being 2.44.

4.3.2.1 Correctly answered questions True/False

The question that was answered correctly by the greatest number of respondents concerned self-reporting of pain by children. 93% of respondents correctly marked the following question as false - *Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.*

Although knowledge and attitude questions are not specifically differentiated, it would appear that by examining the specific questions, at least six of the ten most correctly answered questions measured both knowledge and attitude aspects towards pain management. Seven of the questions in the true/false section were answered correctly by at least 80%. Of the top ten correctly answered true/false questions, only one assessed pharmacological knowledge, question 6 - (the usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours). 76% of students answered this correctly with the answer being false. Table 3 ranks the 20 True/False questions in order of the most correctly answered questions. The correct responses to these questions can be viewed in Appendix 7.
### Table 3: Correctly answered True/False Questions

<table>
<thead>
<tr>
<th>Rank</th>
<th>Freq.</th>
<th>% Correct</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>51</td>
<td>93</td>
<td>Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>91</td>
<td>Patients should be encouraged to endure as much pain as possible before using an opioid.</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>91</td>
<td>Opioids should not be used in patients with a history of substance abuse.</td>
</tr>
<tr>
<td>4</td>
<td>49</td>
<td>91</td>
<td>After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.</td>
</tr>
<tr>
<td>5</td>
<td>48</td>
<td>87</td>
<td>Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.</td>
</tr>
<tr>
<td>6</td>
<td>47</td>
<td>87</td>
<td>Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterised by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.</td>
</tr>
<tr>
<td>7</td>
<td>44</td>
<td>80</td>
<td>Vital signs are always reliable indicators of the intensity of a patient’s pain.</td>
</tr>
<tr>
<td>8</td>
<td>42</td>
<td>76</td>
<td>Patients may sleep in spite of severe pain.</td>
</tr>
<tr>
<td>9</td>
<td>41</td>
<td>76</td>
<td>The usual duration of analgesic of 1-2 mg morphine IV is 4-5 hours.</td>
</tr>
<tr>
<td>10</td>
<td>41</td>
<td>74</td>
<td>Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.</td>
</tr>
</tbody>
</table>
4.3.2.1 Incorrectly answered questions True/False

The nine-true/false questions incorrectly answered most frequently all assessed pharmacology. However, the question that was answered the second most incorrectly is question 25; a pharmacological knowledge question. Although not specifically stated, it is related to addiction. The question asked: *If the source of the patient’s pain is unknown; opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.* Of note was the answer to question 15 where 26% of respondents thought that it was acceptable to give patients sterile water by injection (placebo) as a useful test to determine if the pain is real. Not only is this incorrect, but is ethically concerning. Table 4 shows the ten most commonly incorrectly answered questions.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Item</th>
<th>Freq.</th>
<th>% Correct</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>21</td>
<td>38</td>
<td>Research shows that promethazine (Phenergan) are reliable potentiators of opioid analgesics.</td>
</tr>
<tr>
<td>2</td>
<td>17</td>
<td>21</td>
<td>38</td>
<td>If the source of the patient’s pain is unknown; opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>23</td>
<td>42</td>
<td>50mg Tramadol PO is approximately equal to 5-10 mg of morphine PO.</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>25</td>
<td>46</td>
<td>Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>26</td>
<td>48</td>
<td>Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.</td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>27</td>
<td>50</td>
<td>Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.</td>
</tr>
<tr>
<td>7</td>
<td>18</td>
<td>35</td>
<td>65</td>
<td>Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>37</td>
<td>67</td>
<td>Opioids should not be used in patients with a history of substance abuse.</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>37</td>
<td>69</td>
<td>Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>39</td>
<td>71</td>
<td>Patients who can be distracted from pain usually do not have severe pain.</td>
</tr>
</tbody>
</table>
4.3.3 Multiple Choice Questions

For the nonparametric data from the 12 multiple-choice questions the mode and the median were seven and the standard error was 1.61.

4.3.3.1 Correctly and incorrectly answered questions - Multiple Choice

A wide range of questions answered correctly was observed in this section, from 95% of respondents achieving a correct answer for question 28 (an attitude question) which asked who was likely to be the most accurate judge of the intensity of the patient’s pain, with the answer being the patient themselves, to a 6% correct question response rate for question 25. This pharmacological knowledge question, asked the likelihood of the patient suffering from cancer pain developing clinically significant respiratory depression after increase of their intravenous morphine rate. The correct answer was less than 1%.

The questions most frequently answered correctly were assessing the nursing students attitudes towards pain and its management, while the questions least frequently answered correctly all assessed pharmacological knowledge. It should be noted that for question 25, which had the least number of respondents who correctly answered it, only eight students attempted the question. Similarly, only 13 students attempted question 21 which had the second least number of correct responses. Table 5 ranks the 12 questions in order from those with the highest number of correct answers to those with the least correct answers. Appendices six and seven have the complete questions with the correct answers.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Item</th>
<th>Freq.</th>
<th>% Correct</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28</td>
<td>52</td>
<td>95</td>
<td>The most accurate judge of the intensity of the patient’s pain is:</td>
</tr>
<tr>
<td>2</td>
<td>29</td>
<td>51</td>
<td>93</td>
<td>Which of the following describes the best approach for cultural considerations in caring for patients in pain?</td>
</tr>
<tr>
<td>3</td>
<td>26</td>
<td>48</td>
<td>87</td>
<td>The most likely reason a patient with pain would request increased doses of pain medication is:</td>
</tr>
<tr>
<td>4</td>
<td>31</td>
<td>46</td>
<td>84</td>
<td>The time to peak effect for morphine given orally is:</td>
</tr>
<tr>
<td>5</td>
<td>30</td>
<td>37</td>
<td>67</td>
<td>The time to peak effect for morphine given IV is:</td>
</tr>
<tr>
<td>6</td>
<td>27</td>
<td>36</td>
<td>66</td>
<td>Which of the following is useful for treatment of cancer pain?</td>
</tr>
<tr>
<td>7</td>
<td>23</td>
<td>27</td>
<td>49</td>
<td>Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?</td>
</tr>
<tr>
<td>8</td>
<td>22</td>
<td>24</td>
<td>44</td>
<td>The recommended route administration of opioid analgesics for patients with chronic pain is:</td>
</tr>
<tr>
<td>9</td>
<td>24</td>
<td>20</td>
<td>35</td>
<td>Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given q 4 hours?</td>
</tr>
<tr>
<td>10</td>
<td>32</td>
<td>14</td>
<td>26</td>
<td>Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:</td>
</tr>
<tr>
<td>11</td>
<td>21</td>
<td>13</td>
<td>24</td>
<td>The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is:</td>
</tr>
<tr>
<td>12</td>
<td>25</td>
<td>3</td>
<td>6</td>
<td>A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is:</td>
</tr>
</tbody>
</table>
4.3.4 Case Study Section Scores

The last four questions in the KASRP survey used two patient case studies to examine implied knowledge for decisions making regarding interpretation of assessment data and subsequent management. When asked what score they would document on the pain scale, 41 respondents answered this question correctly for both Patient A and Patient B, stating correctly that they would rate it as an 8 on the scale. In questions 34 and 36 where the question asked how much morphine they would administer, only 10 respondents indicated that they would ‘administer morphine 3 mg IV now’ on the basis of assessment data for Andrew and 14 respondents indicated that they would ‘administer morphine 3 mg IV now’ for Robert. This finding indicates a clear discrepancy between assessment and intervention. In most instances the patient received less than the recommended dose of morphine.

Of the four case study questions, the mode was two out of four. Correct answers in this section ranged from 0 - 4 correct with the largest number of students getting two out of four correct (31 students or 56%). Questions 34 and 36 asked how much analgesic should be administered in response to the nurse’s assessment. These two questions not only ranked low in the correctly answered for this section but also in the survey overall. Table 6 presents the frequency and percentages of the correctly answered case study questions.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Item</th>
<th>Freq.</th>
<th>% Correct</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33</td>
<td>41</td>
<td>89</td>
<td>Andrew: On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
<td>10</td>
<td>22</td>
<td>Andrew: Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.”</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>41</td>
<td>89</td>
<td>Check the action you will take at this time. Robert: On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert’s pain.</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>14</td>
<td>30</td>
<td>Robert: Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.</td>
</tr>
</tbody>
</table>
4.4 Analysis of Items in the Knowledge and Attitudes Survey Regarding Pain

The 36 KARSP questions were examined to analyse any overall patterns in those that were answered correctly and those answered incorrectly. Examining the survey overall with the total of 36 questions, thirteen of the 36 items were answered correctly by at least 80% (n=55) of participants. The top nine lowest and the top nine highest scores are presented representing the bottom and top quartile scores. Of the nine highest scoring questions, five were related to attitude, and of the nine lowest scoring items, all were pharmacological knowledge.

4.4.1 Highest-Scoring Questions

Only one of these was a pharmacology knowledge question; question 31— a multiple choice question which scored a 84% correct rate that asked the correct time for oral analgesics to peak. The two questions (28 and 12) that scored the highest correct responses were both questions relating to assessing pain. Of the nine highest scoring questions, five were related to attitude and four were knowledge. Five of the questions related to opioids and their use in pain management. The item most participants were able to answer correctly referred to who was the person most accurately able to judge pain. The correct answer was the patients themselves and was answered correctly by 95% (n=52) of participants. Table 7 displays the highest-scoring KASRP items.
### Table 7: Highest Scoring KASRP Questions

<table>
<thead>
<tr>
<th>Rank</th>
<th>Question No</th>
<th>Question</th>
<th>Correct Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28</td>
<td>The most accurate judge of the intensity of the patient’s pain is:</td>
<td>52 95</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.</td>
<td>51 93</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>Which of the following describes the best approach for cultural considerations in caring for patients in pain?</td>
<td>48 93</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>Patients should be encouraged to endure as much pain as possible before using an opioid.</td>
<td>50 91</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>Opioids should not be used in patients with a history of substance abuse.</td>
<td>50 91</td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.</td>
<td>49 91</td>
</tr>
<tr>
<td>7</td>
<td>34</td>
<td>Andrew: On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.</td>
<td>41 89</td>
</tr>
<tr>
<td>8</td>
<td>36</td>
<td>Check the action you will take at this time. Robert: On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert’s pain.</td>
<td>41 89</td>
</tr>
<tr>
<td>9</td>
<td>13</td>
<td>Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.</td>
<td>48 87</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.</td>
<td>47 87</td>
</tr>
<tr>
<td>11</td>
<td>26</td>
<td>The most likely reason a patient with pain would request increased doses of pain medication is:</td>
<td>46 87</td>
</tr>
<tr>
<td>12</td>
<td>29</td>
<td>Which of the following describes the best approach for cultural considerations in caring for patients in pain?</td>
<td>51 86</td>
</tr>
</tbody>
</table>
4.4.2 Lowest Scoring Items

The number of participants supplying correct answers for the nine lowest-scoring questions on the KASRP ranged from three (6%) for question 6, to 26 (44%) for question 9. All nine referred to pharmacological items, including administration, pharmacology and dosages. Two of the questions referred to the amount of morphine that would be administered to the patient in the case studies. None of the answers related exclusively to pain assessment (attitude) although questions 17, 32 and 34 are questions that call for the nurse to make a judgement. Table 8 displays the lowest scoring items.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Question No</th>
<th>Question</th>
<th>Correct Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is:</td>
<td>3 6</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
<td>Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.</td>
<td>10 22</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is:</td>
<td>13 24</td>
</tr>
<tr>
<td>4</td>
<td>32</td>
<td>Following abrupt discontinuation of an opioid, physical dependence is manifested by the following: a. sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued b. Impaired control over drug use, compulsive use, and craving c. The need for higher doses to achieve the same effect. d. a and d</td>
<td>14 26</td>
</tr>
<tr>
<td>5</td>
<td>36</td>
<td>Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time:</td>
<td>14 30</td>
</tr>
<tr>
<td>6</td>
<td>24</td>
<td>Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given q 4 hours?</td>
<td>24 35</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>Research shows that promethazine (Phenergan) are reliable potentiators of opioid analgesics.</td>
<td>21 36</td>
</tr>
<tr>
<td>8</td>
<td>17</td>
<td>If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.</td>
<td>21 36</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.</td>
<td>26 44</td>
</tr>
</tbody>
</table>
4.4.3 Comparison of Lowest and Highest-Scoring Items

A comparison of the lowest and highest scoring items reveal that while nine of the lowest scoring questions related to pharmacological knowledge, five of the highest scoring questions were also medication questions, however these were questions that were slanted towards attitude or general knowledge rather than dosages or pharmacology. Of particular interest is that most participants were able to correctly answer theoretical questions regarding patients pain reports but when presented with a case study that required them to report a pain score that the patient had expressed to them, still 11% of respondents did not record the correct pain score. 78% chose not to give the full ordered amount of analgesic medication for patient Robert and 70% of respondents chose not to give the full ordered amount of analgesic medication for patient Andrew even though a pain report of 8 out of 10 would be considered by all measures to be high. These contradictions were explored in the interviews that followed.

4.4.4 Missing Questions

Respondents missed eighteen questions in total with question 21 missed by four students. Only one of the questions that were missed by one respondent had a total correct score of over 80%. The question that was missed the most was multiple-choice question 21 which asked the recommended route of administration of opioid analgesics for patients with persistent cancer-related pain. Four students missed this question with only 26% achieving a correct answer for it overall. Three students missed question eight, which was a pharmacology knowledge question; this also received a low score of 40%. The remaining 16 questions had only one or two missing answers. All of the questions missed were related to pharmacological knowledge
except for questions 33 and 35, which were the case study, questions asking to assess the pain score. The same two students also missed the other two case studies questions, meaning they missed this section entirely.

### Table 9: Missing KASRP Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Total respondents who missed questions</th>
<th>Question</th>
<th>Overall correct %</th>
</tr>
</thead>
</table>
| 21       | 4                                      | The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is:
   a. intravenous
   b. intramuscular
   c. subcutaneous
   d. oral
   e. rectal                                           | 26.00%             |
| 8        | 3                                      | Research shows that promethazine (Phenergan) are reliable potentiators of opioid analgesics.                                                                                                             | 40.00%            |
| 33       | 2                                      | On the patient’s record you must mark his pain on the scale below                                                                                                                                     | 77.00%            |
| 34       | 2                                      | He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.
   a. Administer no morphine at this time.
   b. Administer morphine 1 mg IV now.
   c. Administer morphine 2 mg IV now.
   d. Administer morphine 3 mg IV now.          | 77.00%            |
| 35       | 2                                      | On the patient’s record you must mark his pain on the scale below                                                                                                                                     | 70.00%            |
| 18       | 2                                      | Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.                                                                                                    | 66.00%            |
| 19       | 2                                      | Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.                                                                                                            | 51.00%            |
| 22       | 2                                      | The recommended route administration of opioid analgesics for patients with chronic pain is:
   a. intravenous
   b. intramuscular
   c. subcutaneous
   d. oral
   e. rectal
   f. transdermal                                      | 45.00%            |
| 24       | 2                                      | Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given q 4 hours?
   a. Morphine 5 mg IV                                  | 34.00%            |
He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.

<table>
<thead>
<tr>
<th>36</th>
<th>2</th>
<th>He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Administer no morphine at this time.</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Administer morphine 1 mg IV now.</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Administer morphine 2 mg IV now.</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Administer morphine 3 mg IV now.</td>
<td></td>
</tr>
</tbody>
</table>

The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours

<table>
<thead>
<tr>
<th>7</th>
<th>1</th>
<th>The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>23</th>
<th>1</th>
<th>Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>codeine</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>morphine</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>meperidine</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>tramadol</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>26</th>
<th>1</th>
<th>The most likely reason a patient with pain would request increased doses of pain medication is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>The patient is experiencing increased pain.</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>The patient is experiencing increased anxiety or depression.</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>The patient is requesting more staff attention.</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>The patient’s requests are related to addiction.</td>
<td></td>
</tr>
</tbody>
</table>

Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.

<table>
<thead>
<tr>
<th>6</th>
<th>1</th>
<th>Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.</th>
</tr>
</thead>
</table>

Which of the following is useful for treatment of cancer pain?

<table>
<thead>
<tr>
<th>27</th>
<th>1</th>
<th>Which of the following is useful for treatment of cancer pain?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Ibuprofen (Motrin)</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Hydromorphone (Dilaudid)</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Gabapentin (Neurontin)</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>All of the above</td>
<td></td>
</tr>
</tbody>
</table>

The time to peak effect for morphine given IV is:

<table>
<thead>
<tr>
<th>30</th>
<th>1</th>
<th>The time to peak effect for morphine given IV is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>15 min.</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>45 min.</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>1 hour</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>2 hours</td>
<td></td>
</tr>
</tbody>
</table>

Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:

<table>
<thead>
<tr>
<th>32</th>
<th>1</th>
<th>Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Impaired control over drug use, compulsive use, and craving</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>The need for higher doses to achieve the same effect.</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>a and b</td>
<td></td>
</tr>
</tbody>
</table>
A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is:

- a. less than 1%
- b. 1-10%
- c. 11-20%
- d. 21-40%
- e. > 41%

4.6 Reliability Analysis - internal consistency

A reliability analysis of the data to look at the Kuder-Richardson as a measure of internal consistency was run against the 36 questions and was found to be satisfactory with the size of the co-efficient being 0.742. For research purposes the size of the coefficient factor should be greater or equal to 0.70.

Table 10: Reliability Statistics

<table>
<thead>
<tr>
<th>Kuder-Richardson Alpha</th>
<th>No of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.706</td>
<td>36</td>
</tr>
<tr>
<td>.741</td>
<td></td>
</tr>
</tbody>
</table>

4.7 Inferential Statistics

Inferential statistics makes inferences and predictions about a population based on data collected from a sample by exploring their relationships and variance.

For research purposes the size of the coefficient factor should be greater or equal to 0.70. Item-Total Statistics indicated that removal of any of the items did not raise the Kuder-Richardson to a higher internal consistency level.
this study, it is valuable to explore the influence demographic variables have on the performance on the survey, the total score. As these variables are non-parametric in their distribution and are matched data, the Kruskall Wallis test was applied.

4.7.1 Relationships between the Variables

The demographic variables of interest are age, gender, previous/current nursing experience, previous training as an Enrolled Nurse (EN) and if they were currently working as an EN.

4.7.2 Comparison of means - Kruskall Wallis Test and the Mann-Whitney U Test

The mean scores of the various demographic variables were analysed to find out if there was any statistical significance in overall total scores, and scores of the three subsections of the survey. Inferential statistics makes inferences and predictions about a population based on a sample of data collected from a sample. From the results of the Kruskall Wallis Test (age only) and the Mann-Whitney U Test (conducted for gender, currently working and past experience) it can be assumed that there is no significant difference between overall scores of the KASRP and age, gender, previous experience or whether the respondent is currently working in healthcare.

4.7.2.1. Age

The Kruskall-Wallis test showed that there was no statistically significant difference between the scores obtained by students in the three age groupings in the three subsections of the test and the total overall score.

Table 11: Differences in scores based on the age of participants

Kruskal-Wallis Test
<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-23</td>
<td>32</td>
<td>26.33</td>
</tr>
<tr>
<td>23-30</td>
<td>7</td>
<td>21.07</td>
</tr>
<tr>
<td>Over 30</td>
<td>8</td>
<td>17.25</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-23</td>
<td>32</td>
<td>24.83</td>
</tr>
<tr>
<td>23-30</td>
<td>7</td>
<td>26.21</td>
</tr>
<tr>
<td>Over 30</td>
<td>8</td>
<td>18.75</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-23</td>
<td>32</td>
<td>24.95</td>
</tr>
<tr>
<td>23-30</td>
<td>7</td>
<td>23.64</td>
</tr>
<tr>
<td>Over 30</td>
<td>8</td>
<td>20.50</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-23</td>
<td>32</td>
<td>23.98</td>
</tr>
<tr>
<td>23-30</td>
<td>7</td>
<td>24.00</td>
</tr>
<tr>
<td>Over 30</td>
<td>8</td>
<td>24.06</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>Total TF</th>
<th>Total MC</th>
<th>Total CS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>3.251</td>
<td>1.561</td>
<td>.826</td>
<td>.000</td>
</tr>
<tr>
<td>df</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>P value</td>
<td>.197</td>
<td>.458</td>
<td>.662</td>
<td>1.000</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test  
b. Grouping Variable: Age

4.7.2.2 Gender

The Mann-Whitney tests showed that there was no significant difference between the total or subsection scores of students who identified as being male or female.

**Table 12: Differences in scores based on the gender of participants**

**Mann-Whitney Test**

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total TF</td>
<td>Male</td>
<td>9</td>
<td>24.39</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>42</td>
<td>26.35</td>
</tr>
</tbody>
</table>
4.7.2.3 Previous experience in healthcare

No significant difference was found between scores of students with past healthcare experience and those without previous experience.

*Table 13: Differences in scores based on the previous experience of the participants*

**Mann-Whitney Test**

<table>
<thead>
<tr>
<th>Previous Experience</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total TF No</td>
<td>37</td>
<td>29.97</td>
<td>1109.00</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>23.94</td>
<td>431.00</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total MC No</td>
<td>37</td>
<td>27.30</td>
<td>1010.00</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>24.14</td>
<td>1074.00</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>Total TF</th>
<th>Total MC</th>
<th>Total CS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>174.500</td>
<td>180.500</td>
<td>171.000</td>
<td>111.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>219.500</td>
<td>1083.500</td>
<td>1074.000</td>
<td>1014.000</td>
</tr>
<tr>
<td>Z</td>
<td>-.362</td>
<td>-.217</td>
<td>-.494</td>
<td>-1.940</td>
</tr>
<tr>
<td>p-value</td>
<td>.717</td>
<td>.828</td>
<td>.621</td>
<td>.052</td>
</tr>
</tbody>
</table>

* a. Grouping Variable: Gender
  b. Not corrected for ties.
4.7.2.4 Currently Working in Healthcare

Even though the mean rank of the total and subsection scores were higher for those not currently working the difference was only significant for the total CS score with a p value of 0.045. This was not thought to be of practical significance.

Table 14: Differences in scores based on whether participants are currently working in healthcare

Mann-Whitney Test

<table>
<thead>
<tr>
<th>Currently working in healthcare</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total TF</td>
<td>27</td>
<td>29.02</td>
<td>783.50</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>27.02</td>
<td>756.50</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total MC</td>
<td>27</td>
<td>26.65</td>
<td>719.50</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>29.30</td>
<td>820.50</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test Statistics

<table>
<thead>
<tr>
<th></th>
<th>Total TF</th>
<th>Total MC</th>
<th>Total CS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>260.000</td>
<td>307.000</td>
<td>241.500</td>
<td>297.500</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>431.000</td>
<td>1010.000</td>
<td>412.500</td>
<td>1000.500</td>
</tr>
<tr>
<td>Z</td>
<td>-1.322</td>
<td>-.479</td>
<td>-1.820</td>
<td>-.641</td>
</tr>
<tr>
<td>p-value</td>
<td>.186</td>
<td>.632</td>
<td>.069</td>
<td>.522</td>
</tr>
</tbody>
</table>

a. Grouping Variable: Previous Experience
<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total CS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>31.98</td>
<td>863.50</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>24.16</td>
<td>676.50</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>24.52</td>
<td>662.00</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>31.36</td>
<td>878.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Statistics</th>
<th>Total TF</th>
<th>Total MC</th>
<th>Total CS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>350.500</td>
<td>341.500</td>
<td>270.500</td>
<td>284.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>756.500</td>
<td>719.500</td>
<td>676.500</td>
<td>662.000</td>
</tr>
<tr>
<td>Z</td>
<td>-.467</td>
<td>-.631</td>
<td>-2.007</td>
<td>-1.593</td>
</tr>
<tr>
<td>p-value</td>
<td>.640</td>
<td>.528</td>
<td>.045*</td>
<td>.111</td>
</tr>
</tbody>
</table>

*p<0.05

a. Grouping Variable: Currently working in healthcare
4.7.2.5 Enrolled Nurse Qualification...

No significant difference was found between scores of students that were currently working as an enrolled nurse when compared scores of students who were qualified as an EN but not currently working.

Table 15: Differences in scores based on whether the participant holds an enrolled nurse qualification

Mann-Whitney Test

<table>
<thead>
<tr>
<th>EN - qualified and worked</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>49</td>
<td>28.94</td>
<td>1418.00</td>
</tr>
<tr>
<td>yes</td>
<td>6</td>
<td>20.33</td>
<td>122.00</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total MC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>49</td>
<td>29.22</td>
<td>1432.00</td>
</tr>
<tr>
<td>yes</td>
<td>6</td>
<td>18.00</td>
<td>108.00</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total TF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>49</td>
<td>28.73</td>
<td>1408.00</td>
</tr>
<tr>
<td>yes</td>
<td>6</td>
<td>22.00</td>
<td>132.00</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>49</td>
<td>28.37</td>
<td>1390.00</td>
</tr>
<tr>
<td>yes</td>
<td>6</td>
<td>25.00</td>
<td>150.00</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test Statistics\(^a\)

<table>
<thead>
<tr>
<th></th>
<th>Total CS</th>
<th>Total MC</th>
<th>Total TF</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>101.00</td>
<td>87.00</td>
<td>111.00</td>
<td>129.00</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>122.00</td>
<td>108.00</td>
<td>132.00</td>
<td>150.00</td>
</tr>
<tr>
<td>Z</td>
<td>-1.377</td>
<td>-1.664</td>
<td>-.981</td>
<td>-.489</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.168</td>
<td>.096</td>
<td>.326</td>
<td>.625</td>
</tr>
<tr>
<td>Exact Sig. ([2^*(1-tailed Sig.)])</td>
<td>(.226^b)</td>
<td>(.110^b)</td>
<td>(.347^b)</td>
<td>(.645^b)</td>
</tr>
</tbody>
</table>

\(a\). Grouping Variable: EN - qualified and worked
\(b\). Not corrected for ties.
4.8 Qualitative Data – Thematic Analysis and Complementarity

The qualitative analysis of the interview transcript data aimed to illuminate a richer understanding of the participants’ knowledge and attitudes towards pain assessment and management through describing and interpreting both the individual and shared experiences of the participants. Complementarity was used to validate the data obtained from the survey through the interview. This enabled cross-validation to enhance confidence in the findings. It was proposed that the explanatory qualitative data collected from the interviews would help to clarify the quantitative findings from the survey.

4.9 Characteristics of Interview Participants

All 55 respondents were invited to participate in the follow up interviews and 27 stated they would be happy to be contacted. After multiple attempts to contact all 27 respondents, only six agreed to be interviewed. One interview was conducted face to face and the other five were conducted over the phone with the researcher informing and asking permission for them to be recorded, ensuring participants that the information would remain confidential and any specific participant responses if used would be de-identified.

The mean time of the interviews was 21 minutes in length. Participants’ ages ranged from 20 to 28 years with a mean age of 22 years. Five of the respondents were female. Of the six respondents, three had not worked in health previously or during their studies, one was currently working as a Patient Care Attendant (PCA) and Assistant in Nursing (AIN), one was working as a medical receptionist and the final student had worked as a PCA while studying to be an EN but had not worked in either role while...
studying her nursing degree.

4.10 Themes

This section of the chapter will describe the main themes that were identified following data analysis of the interview transcripts.

Three major themes were identified following the data analysis with subthemes supporting each one. Although each theme is discussed separately with exemplars from the transcribed interviews, it must be noted that there was some cross over with the subject matter. Figure 3 sets out the key themes and subthemes captured from the interview data.

Figure 3: Key Themes and Sub-themes

4.10.1 Theme One: Knowledge

Knowledge
- We did a bit
- Just the basics
- Learnt on prac
- A bit on pharmacology
- Positioning and heat packs
- No-one can know everything

Assessing Pain
- Mmm, pain chart?
- Just look at the patient
- Smiling but still in pain

Attitudes and Beliefs
- Drug seekers
- I don't believe you
- Nurse as gatekeeper
- Pre-judging the patient
- Just give them what they want appears to be the attitude
- So why is pain undertreated?
From examining the university curricula for the two faculties of nursing involved in this study, it would appear that pain and pain management is not taught in discrete units. As discussed in the literature review (chapter 2.7) regarding *Pain Education for Undergraduate Nursing Students*, multiple studies have identified the inadequacy of the amount and content of pain education in the curricula. Sub-themes of this section capture the essence of what the participants remembered being taught about pain at university.

4.10.1.1 We did a bit

Interviewees were asked about what they remembered being taught about pain and when it was taught in their course. Responses indicated that a limited amount of the curriculum content was recalled, even when and where it was actually taught:

*I think they kind of assumed we would know about it* but they did mention it a bit... - P.S

*We did a bit in pharmacology; that was more about medications and pain relief and that sort of stuff and we did a bit in chronic care and that was more like how to respond to pain.* – A.N

*I think pharmacology did a bit of it and I think Older Adult helped also, and the health assessment units* - K.R

Although a number of students remembered ‘doing a bit’, statements sustained their belief that they did not remember much of anything:

*I can’t really remember a lot of the uni stuff ...* - P.S
Like for pain generally it was pain management but you just forget about the drugs and stuff so when it came to the basics of whether the patient is in pain or stuff I really don't remember much. - T.S

I doubt we actually learnt the skills - K.R

4.10.1.2 Students knowing “just the basics”...

Regarding the level of their knowledge of assessing and managing pain, most of the participants indicated dissatisfaction with their perceived knowledge level, citing a lack of confidence and only knowing the ‘basics’ regarding assessment of pain. This infers that knowledge was not deep or adequate for the tasks they were carrying out. The term ‘basic’ commonly occurred in dialogue many times throughout the interviews:

Just basic if would say – A.N

I know the basic stuff... just basic. - P.S

I have the basics. – T.A

It is not enough - I just have the basics like how to assess pain but even that I had to practise so many times to get it right or I don't feel confident, .... I don’t think it’s enough. – T.S

Statements using the word basic continued throughout the interviews when asked about assessment of pain:

Basic I would say - how to assess pain. - P.S

I know the basic stuff like how to assess the pain ....I don't really have any advanced knowledge - so - just basic – T.A
4.10.1.3 Learnt “on prac”

It emerged that most students believed the clinical practicum was where they gained most of their knowledge on pain assessment and management. The theory-practise gap for nursing students is one that has been widely addressed in international literature, where it is acknowledged that students feel that a considerable amount of knowledge and skills is learned ‘on the job’ rather than in the classroom. This was backed up by the responses; when asked where they believed they gained most of their knowledge, concerning where they learnt most of their information on pain, students stated:

*I feel like a lot more of an education when I was on placement than at uni* – K.R

*I feel that out on prac we learnt a mountain load of things but also,...* **put into practise** all those things you learnt in class ... they tell you about the pain scales in class but on prac (clinical practicum) you could put it into practise and actually gauge a response.*- T.A

*I think generally I maybe have a base from the education but I think a lot of what you are going to give people and like the actual pain medication you learn on the ward.* – T.A

*I can’t really remember a lot of the uni stuff* - it was over 3 years but I’m sure the majority I got when I was on placement. – A.N

Two participants who currently worked in the healthcare industry suggested that they learnt more practical skills from their jobs:

**Observation at work and also combined with study** - K.R

**From work, from prac and self-learning...** A.N
When asked how much they learnt from the nurses they were buddied with on the wards compared to what they learnt at university, some students acknowledged that learning from other nurses was of more benefit than theoretical knowledge learned at university.

*Like with pain assessment, they have actually taught me more than what I have learned at uni, and they always check how I assess pain and they demonstrate in front of me – A.N*

*I would say mainly during the placements - the clinical placements, you get to see how the nurses do it and you also get to practise. - P.S*

The same student acknowledged that the hands-on practical approach worked more for her:

*I learn by doing and seeing things rather than just sitting down but everyone is different. - P.S*

Respondents believed that there were certain situations that just could not be replicated at university in a simulated situation or by working through theoretical case studies:

*When you actually see it in person and knowing what that patient has and is dealing with and has dealt with in the past it’s a bit different. If you have an 80 year old who’s in a lot of pain and got ... arthritis and they’ve got a fractured hip and they hurt themselves like falling over previously you know that like - they know their pain pretty well because they are kind of always in the pain but it’s hard when it’s just a simple case study in front of you. I hated case studies because you don’t know the full story. - C.S*
It's easier to go to it when you're face to face with someone complaining of pain then when you're in class and it's all theoretical. - K.R

... a stroke unit so most of them are aphasic so they can't speak but they are in pain so you had to learn how to actually assess pain quite often. – T.S

I think it's actually better when you're with the patients ... when you're on the wards ... putting it to practise ....you can learn a lot at uni but I think for something like pain .... it's more consolidated on the wards. – T.A

4.10.1.4 A bit on pharmacology

Students were asked if they recalled attending any specific lectures on pharmacological management of pain at university. It was revealed that the interviewed students were uncertain of how much information they had received and when questioned further revealed that they did not remember any of the specifics.

I think a few pharmacology ones ... we had a lecture and maybe a tutorial. I think pain was mentioned throughout different lectures and once in pharmacology I think we might of had a bit more than one lecture. – P.S

I remember study on paracetamol and morphine but there was not a lot of the schedule 8 drugs like the morphine and the codeine, we just touched a bit of it at uni but I think I got to learn more about it during the prac. – C.S

I did not really have a pharmacological unit - all of mine were clinical science units I mean they spoke about like how the body shows pain and how pain management helps but it wasn't like a huge thing it was more like general topic of it. - K.R

I remember seeing fentanyl patch and regular mediation - codeine, panadeine yea...- P.S

We learnt a bit on pharmacology - I think there was the pain ladder or something like that - opioids - level of pain. – T.A
One student found even on their clinical placement, experience with pharmacological management of pain was limited:

*We weren’t allowed to give a lot of the pain medication because a lot of them were like schedule 8 or schedule 4s and we weren’t allowed to do that. A lot of the time.. when the nurse was doing something like that you just go and do something like obs ... so you don’t actually learn a lot of the pain medications.*  
– C.S

4.10.1.5 Positioning, ice and heat packs

Use of non-pharmacological interventions for pain relief can be implemented as an independent nursing action, although institutional policies may dictate what can be used as an adjunct to analgesic medication. Simple non-pharmacological measures that most nurses feel comfortable to implement include position changing, emotional care, touch and use of heat packs. When interviewees were asked about their knowledge regarding the use of non-pharmacological measures learned at university, they admitted that their learning regarding these techniques was limited:

*Yes they told us but it was first year I still remember it but it’s been some time. In first year they usually send us to Aged Care ... they are in so much pain medication so if they have other pain you literally had to think of another way that does not involve medication so that’s where you learn all this repositioning, heat and cold packs and all that.*  
– P.S

*Oh - yes - it was more about positioning, like moving the patient or lifting up the heels or the legs, yea, we did learn a bit - it was just a chapter in the natural remedies, it was just a bit though, it wasn’t much.*  
– C.S
Yeah I’ve done heat packs and ice packs, try to sit them in different positions, giving them like something to drink, see if they have gone to the toilet, like got abdominal pain like just a little bit of wind. - K.R

Yeah we cover that quite a lot like the use of heat, even the use of ice like that sort of stuff, we did not go into any great depth but we did cover it. - A.N

One interviewee could not remember learning anything specific on the topic of non-pharmacological pain relief at university whatsoever:

From uni no actually - I think from work I learned a few things I can do in pain management without pharmacology. - P.S

Participants were asked if they believed the nurses they had worked with were happy to use non-pharmacological methods of pain relief in conjunction with analgesic medication:

I think quite a few nurses understandably want to use other forms like heat packs without having to go straight for the hard stuff. – T.S

I did a maternity unit and we did quite a bit of both types of pain relief while in labour. – P.S

One student who was working with post-operative gynaecological patients reported using non-pharmacological strategies as an adjunct to the pharmacological orders:

I’ve had a patient who had a fair amount of fentanyl - about 200 milligrams ... I’ll try something like heat packs and I’ll elevate you a bit more or I will turn onto your side a little bit. Obviously if it’s like a cramping pain you try all the different things rather than give more pain meds. – C.S
Non-pharmacological pain management may not be used, as it is more convenient to administer analgesics if the nurse is busy. One participant acknowledged that some nurses thought such measures took up a lot of extra time, but in fact questioned whether that was so:

*Nurses don’t really have the time most of the time so - they say that but …. - T.S*

However, one participant did not believe non-pharmacological measures were often used:

*Hospitals are mostly set up to give medications and probably not a lot else. – T.S*

The capacity to use non-pharmaceutical pain-relieving devices was available however some participants questioned their efficacy for actual pain relief:

*Usually sometimes it’s like a diversion, you give someone a heat pack - like it’s so warm and cuddly but some things like repositioning and stuff generally tend to not usually reduce the pain as such but increase the comfort of the patient.*  
– C.S

Yeah I mean one of the residents was “like do you want a heat pack”- “like I’ve had this back pain for years now so it doesn’t matter whether they give it to me or not”.- T.S

In some care settings, certain treatments may be contraindicated particularly due to safety issues such as the potential for burns in the case of hot packs. One student specified that where he worked in aged care the following was the case:

*It’s not allowed. They prevent you from using heat packs because of the danger of burning residents. – T.S*
4.10.1.6 No-one can know everything.

Whilst it is true that not everyone can know everything about pain, the cornerstone of treating pain lies within effective assessment skills. Most of the students interviewed did not have high self-acknowledged skills when it came to assessment. As stated by a couple of students:

*I don’t feel confident in assessing pain – C.S*

*I still don’t know everything about pain – K.R*

Another participant expressed a slightly more relaxed attitude about not knowing a lot about pain management as she felt that not all pain was able to be resolved.

*No-one can know everything about pain even the acute pain team because it’s so subjective and different there aren't ways of solving people’s pain and managing it … I don’t think you can ever know all of everything about it.* – T.A

When asked to rate knowledge level on numeric rating scale, students indicated that they did not rate themselves highly. On a scale from 1-10:

*Maybe like a 6. – C.S*

*Would probably be assessing pain knowledge I would probably be a 5 to 4.5* – P.S

*When it comes to the assessment part of it really around a 3 or a 4.* – C.S

*Probably about a 4 when I started and now about a 6 – K.R*

Only one interviewee stated that they felt confident with their knowledge level; however they rationalised that although they felt they possessed an acceptable level of confidence, they always relied on asking others if unsure:
I still do ask the doctors ... if you can tell that they’re in major pain. – T.A

This indicated that it was believed that their knowledge was adequate with backup from more experienced practitioners.

The one student who rated her knowledge quite high acknowledged that most of it came from personal experience rather than clinical involvement:

Probably I would probably say about 7 I’m not that experienced in it only have my personal experience ....I haven’t really dealt with a lot of other people’s pain. – T.A

Some students felt that although they did not know a great deal at the present, however, acknowledged that it was a process that they believed came with experience. One student was not very confident at this stage but was hopeful that it would come with time.

It’s a learning curve; something that you did not know and you keep learning everyday ... I’m not that confident but it’s getting there ....it’s not as bad as it was. - T.S

4.10.2 Theme Two: Assessing Pain

Knowledge of pain assessment scales and tools to accurately assess pain is critical to optimal management interventions. While pain is highly subjective, its management demands that objective and standardised assessments are used that are ongoing, individualized and well documented. 113
4.10.2.1 Mmm pain chart?

There are multiple tools that a nurse can use to assess pain, with the simplest being a numerical rating scale. When asked what types of pain assessment they were taught at university and used during practical placement, respondents were at times unsure:

Pain mmm - not thinking now, pain chart, go with pain chart ... chart something... - K.R

We had like pain management a chapter and in that we learned how to assess pain so the mnemonic we used was PQRST. - P.S

I guess on and off in different lectures ... we did health assessment and learned COLDSPA. – C.S

They tell you about pain charts in class – T.A

Some students reported that although they would assess their patients using a particular assessment scale or tool, they also supported their assessment with evaluation of the patient’s physiological changes and behavioural responses:

I usually follow the PQRS, usually from the way they behave and the vital signs sometimes, to see if their heart rate is up or their blood pressure and I just ask them if they have any pain. – T.A

Basically like we do a 10 scale .... the grimacing and everything we learn to read body language so like if they're all curled up in a ball you can see it they’re in pain so physical signs of pain and how to read them. – A.N
These statements indicated that students used a variety of methods but appeared to be unsure of any particular tool. It was also implied that body language was as good as an assessment tool as any.

### 4.10.2.2 Just look at the patient

While research indicates that the assessment of pain is very subjective and different patients react in different ways to their pain,\textsuperscript{10} some students conveyed that behavioural assessment for pain was the most effective assessment method, particularly when the patient had cognitive impairments or was unable to verbalise effectively. Behaviours were described that supported their evaluation that the patient was in pain.

*I think in Aged Care you probably just better off looking at the behaviour of the patient.* – T.A

*I've used the old school observation one, and I would use observation from the machines like blood pressure and heart rate most often ... what the patient looks like and what they are saying ... if the patient is able to talk to you that's the best bet.* – P.S

*If they were able to talk but most of them actually not so you observe them. Observe the changes they may have in their behaviours and how they are carrying on.* – T.A

*If it's someone you don't know literally the expression will tell you if someone isn't comfortable or in discomfort anyway you look at someone and their posture as well can literally tell ...* - T.S

*When they are cringing and they're gasping, not talking in full sentences and things.* – K.R
Some found that with familiarity it became easier to assess the patient’s pain:

*Because you are always observing these people like stroke patients are four hourly so it was quite easy to get to know the trend of the patient and pinpoint their pain.* – T.S

*Where we went for prac ... it was a stroke unit so most of them are aphasic so they can't speak but they are in pain so you had to learn how to actually assess pain quite often.* – T.A

### 4.10.2.3 Smiling but still in pain

Not all students believed that a behavioural approach to assessment using objective data was the best method, acknowledging that people in pain may behave in ways incongruent to the amount of pain they express. Participants reported:

*Someone can be smiling but still in pain especially if it is chronic pain.* - T.S

*Because someone might be used to being in chronic pain ..they are used to being in such a state of pain to the extent that they can sort of cover up that they are actually in pain until it ...increases and they are truly in pain.* – T.A

*Depends on the patient .... especially with some of the older generation... they got other health issues going on with them ... it may be just a blood pressure that's high and they've got used to that - so yea - you have to look for more than one thing I think* - P.S

Assessing a patient’s pain, but looking at their behaviour, was acknowledged to not be a very effective method of assessment:

*It's not just listening to the numbers it's actually looking at the person as a whole and that's when you can actually tell because someone says it's 10 you also have to look at this person to see if it's congruent or they just want the drug. I think the best thing is to use different assessments.. and at the end of*
the day just … believe what the person is telling you about the pain because they’re the best person to assess it. - T.A

You can’t really - if you are so used to that high level of pain I guess you’ll get used to it …. I think it’s very subjective, it gets very hard to actually know whether someone’s in that much pain that or they understand like when we say 10 out of 10 that’s like the worst possible pain and I just think while it’s really painful I need medication. - P.S

I guess you can look at people’s facial expressions and .. you can judge whether you are going to give them 200mg or 400 mg but you have to judge on subjective and the objective which I find quite difficult as you just don’t know if someone just wants the pain medication or whether they are actually in pain. – C.S

Interviewees were questioned regarding their answers for the case study segment of the KASPR survey. (See appendix 6, page 195 for case studies). Of the six students interviewed, only one student (P.S) received full marks. Four received marks of two and three with these students all getting the first question correct in each scenario, i.e. what pain score would you record when the patient states their pain to be 8 out of 10. One student (K.R) recorded eight for Robert who appeared to be in pain, giving Andrew, the patient who was laughing, a score of five. When asked why she gave the score of five, the interviewee responded:

Because they are not showing … the physical like symptoms of what a person in pain generally does .. whole body is going to be showing … they are in that amount of pain …. sitting up and talking it’s not a sign of being… in super like heaps of pain. – K.R

4.10.3 Theme Three: Attitudes and Beliefs
The key elements in this thematic category covers the attitudes of nursing students, including unwillingness to believe the patient’s self-reported pain and reluctance to administer prescribed medication for reasons such as fear of addiction and adverse side effects. This was also evident in some of the attitudes displayed by the interviewees themselves.

4.10.3.1 Drug seekers

This theme conveys the way interviewees observed attitudes of other health care professionals in the clinical area towards pain management, which subsequently affected the delivery of pain relief and care of the particular patient. Some respondents observed that patients were labelled as “drug-seeking” particularly by nurses:

They are drug seeking but they will still give them the pain medication because you can’t really know ... if they say they’re in pain you can’t say I know you’re not - C.S
A lot of people want to use a lot of pain medication and keep asking for more and more and more ... - T.S

The same student displayed a particularly cynical attitude towards certain patients:

It depends for example I was in mental health ... because some of them are actually drug addicts and just want the drug. - T.S

4.10.3.2 I don’t believe you

A patient’s statement that they have pain is not enough to guide a nurse regarding intensity, type and duration. Without a proper assessment, the nurse may rely on body language and disbelieve the patient when they say they are in pain.
When the respondents were asked if they thought patients always told the truth when reporting their pain levels to the nurse, they replied with the following responses:

_I think they think they are telling the truth._ – P.S

_Different things influence different perception of pain and they might be truthful but other times it can be that the patient unfortunately does seek certain drugs or whatever and for that reason they may not be truthful._ – A.N

_I've had patients who say that they are in heaps of pain, it’s like you’ve got to be able to use your own judgement I mean you’ve seen someone else like in worst pain before to be able to um to go like well they are not actually in 10 out of 10 pain you know what I mean? - K.R_

One respondent believed that patients were not always truthful with their pain scores, but conceded:

_No I don’t think so I will be honest with you but then it doesn’t really matter what I think.... some people are like its 10 or 11 and you have just done it before and yea I don't think so._ – P.S

If there are no physical signs of pain, research has indicated that nurses may not be willing to believe patients self-reporting of pain. For patients to be perceived as legitimately in pain; even nurses often require credible evidence although it is well known that in chronic pain, often there is a lack of physical pathology to support the patient’s claims. Inconsistencies between the self-reporting and the clinical outlook cause nurses to question the patient. Some students interviewed reflected this attitude:

_Because they are not showing ... physical .. symptoms of what a person in pain generally does. A person in pain isn’t going to be able to talk they are going to_
be ... really struggling and trying to cope with it. The whole body is going to be showing like they are in that amount of pain whereas sitting up and talking it's not a sign of being like being in super heaps of pain. – K.R

Then there are the people as soon as I have a little bit of pain - like yep I'm eight out of ten pain and they will just be sitting there or they'll be walking down for a smoke and yep I'm like nine out of ten pain. – C.S

Sitting up talking to their friends and they are like I'm in 10 out of 10 pain it's like well you're not really. – K.R

Some research indicates that nurses have been known to not believe pain scores as reported by patients and to document lower scores than expressed by the person in pain.43,102,133 When interviewees were asked if they thought other scores were ever recorded, there were mixed responses:

Yes they do they do definitely, 'cause I mean ... when I've had patients we say that they are in heaps of pain... it's like you've got to be able to use your own judgement ....I mean you've seen someone else like in worst pain before to be able to um to go like well they are not actually in 10 out of 10 pain like you know what I mean?- K.R

I haven't heard of them not putting exactly what they said but I have heard of nurses and I've seen nurses who will say ‘how much pain are you in?’ and then the nurse will guesstimate a number - A.N

When asked if they had ever witnessed an incorrect pain score being recorded or if they would ever consider recording a pain score that the patient had not reported.

No I would just put what they say no matter why even if I did believe them or not because it's unethical like I can't feel pain for them. - T.S
If someone says look I'm in pain it's eight we can sort of like argue on the medication amount but writing it down? I would literally write if she or he says it's eight. – T.A

4.10.3.3 Nurse as gatekeeper

Some nurses made judgements about patients assuming a role as ‘gate keeper’, a concept related to awareness of safety and concerns about the amount of analgesics the patient may be taking. It was acknowledged that although they would record the correct pain score, their judgment of the amount of pain the patient was in often influenced the amount of analgesics that patient would receive:

I generally just put what they said down and then ... discuss it with another nurse because if it is... a bit suss (suspicious) ...and you say well I'll give them paracetamol rather than tramadol ...you don't change it because that's what they said, you asked them the question it's not like you're allowed to change what they've said but it's the way that you go about reacting to that. - K.R

When asked if they had ever observed medication being withheld as a result of the nurse’s assessment or if they had observed medication being given unwillingly by the nurses, responses included:

He was thinking that this guy was getting addicted to the medication so it was the only time I actually saw this people literally saying no we're not giving this drug because you are laughing and smiling and just went out for a smoke and you're coming and telling yes you want morphine most of the time... C.S

No maybe ... wouldn't withhold I would definitely look at what they had before if I think they are due for another ... pain medication then I would give them but I feel like if they had too many and the difference in hours doesn't make sense then I would probably not give it myself unless I had direction from the doctor – A.N

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**It may be the worst pain they’ve ever had but it’s not...** it doesn’t require the full intervention of all the big drugs, which they think they should be getting... - K.R

Because pain obviously is very subjective but you know it’s the way we manage it so maybe you’re more like an eight we will give you something for it we’re not going to let you sit in pain but we’re not going to give you the strongest of drugs because of a twisted ankle - you’ve not detached a limb or something you know what I mean? – K.R

Judgements were made about patients who requested more analgesic medication than was expected or whose behaviour was incompatible with the pain intensity.

Respondents reported:

I find a lot of people want to use a lot of pain medication and keep asking for more and more and more even though they aren’t in pain ... people as soon as I have a little bit of .. yep I'm 8 out of 10 pain and they will just be sitting there or they’ll be walking down for a smoke and yep I'm like 9 out of 10 pain. – T.A

Patients with chronic pain tended to overestimate their pain - a nine or an eight and they want Oxycodone or they want Codeine because they are just craving for the drug ... this person is smiling and laughing and pretending that it is out of 10 – T.A

Some students sought to control the amount of analgesics a patient received, in some cases limiting the amount for patients that they perceived did not warrant it.

Maybe not giving them the full dose if they have literally just had it and they are just sitting there watching a movie and looking completely relaxed or they’re walking down having a smoke... You need to try and educate them but you do have other things to do and you know you will get back to them in 10 minutes or whatever. – C.S
Nurses in some instances can make a decision when analgesic medication is prescribed as a range. Nurses need to assess what to administer based on the clinical findings and pain score. Some participants stated they would elect to give smaller doses first then re-assess.

*Morphine ... it's 3 milligrams ... it's not like you're supposed to give than 3 milligrams you can choose you can just give them one two or three.* – T.A

*Generally you would tend to slide down* if they still had the pain you could still give them the other pain relief after some time if it doesn't work you can still come back. – T.A

*I think that sometimes patients react well to the smaller doses* rather than the huge and then you left for hours without any you get what I mean? – C.S

The case study (appendix 6, page 195), where students where asked how much morphine they would administer after the patient stated their pain level was 8 out of 10 elicited similar responses. Only one participant indicated that they would administer the higher amount of morphine ordered on the medication chart. Most participants preferred to try the lower dose on the sliding scale, despite the pain being reported at a high level:

*It’s not like you’re supposed to give than 3 milligrams* you can choose you can just give them one two or three – T.A

*It is a sliding scale year so generally you would give less* than if they still had pain you could give more - T.S

*I would give them one and I would come back and assess* them again to see if they still have the 8 and then I would give them the second one like two mg and if they still had pain after that I’ll come back and give them three mg - C.S
One student was unwilling to give the prescribed order, stating that they would look for other forms of analgesic rather than giving opioid analgesics:

I think that I would try other pain relief before going straight to morphine. – A.N

One participant stated that if the patient did not know how much they had, assessment on the efficacy of the analgesics might be more accurate:

They’re not going to be able to tell you whether you are giving them the higher dose or the smaller dose ... if you’ve given them the smaller doses and then you assess them at ... a four out of 10 then ... - you can kind of start to track how the pain medication is working for them – A.N

4.10.3.4 Pre-judging the patient

For those patients who had been admitted on the wards previously and were known by the staff, there was often quite a lot of information already on their pain management, which one respondent saw as influencing the management of that patient.

I know so much about the patient before I even see them - I already have these ... what can I say preconceptions about this patient before I actually see them. - T.S

Another respondent felt that even before the nurse had assessed the patient there was often an element of pre-judging of the amount of patient that patient should be in.

Other people have been in and out of hospital so often and have been seen by so many specialists and so many people have literally managed their care in terms of pain management and you have so much on that patient ... - T.A
4.10.3.5 Just give them what they want appears to be the attitude

Respondents believed that those patients who complained the most received more attention and were more likely to receive medication quicker. One respondent observed that patients might give the nurse a higher pain score or act in a difficult manner in order to be treated quicker by the nurses:

Some of the patients they give you like a really high score and maybe because it is instant relief, maybe that is why, I think the nurses think the patient will keep complaining, they will get cranky, more work I think. – T.S

I think especially in aged care ... the attention - for some when family members are around it just get worse. I think attention...-T.S

It was acknowledged that patients who made more of a fuss were more likely to get the relief they sought, more of it and in a more timely fashion.

They will ring the bell and say they’re in pain you talk to them and say I’ll come back and you get out and 2 minutes later the same call bell again- it’s out of frustration - you end up giving them what they want. – T.A

4.10.3.6 So why is pain undertreated?

Pain is undertreated for many reasons including the following identified by interviewees. Students expressed concerns regarding the amount of medication patients were taking contributing to a significant pill burden:

In Aged Care ... I know pain is... undertreated for many reasons ... for example this morning handing over someone 16 tablets just 8 o’clock and ... this person says they are in pain I’m going to have to add to a 3 more tablets and ... some of them have given up already. - T.S
In the nursing homes ... **they have stopped giving the medications** like pills and stuff and they are usually on patches because some of them can’t swallow especially in the dementia ward. – T.A

Patients that were perceived to having a tolerance to the analgesics:

*Yeah it's pretty frustrating ‘cause especially with chronic pain patients or patient's ... like IV drug users ... it's just very hard to manage their pain even when they're on very high doses of medication.* – C.S

*Yea because of their tolerance to the pain and especially ... IV drug users their tolerance has increased ... so it’s like it’s hard to get on top of it sometimes or for some people ..certain pain medications.. don't work for them.* – C.S

Certain side effects were perceived by at least one participant:

*Drugs that may cause a respiratory depression - they’re not the things you want to have to deal with.* – K.R

Regardless of the amount of pain a person was in, some respondents thought that certain patients after a period of time may be unwilling to accept analgesics. One student thought that some patients were just tired of being on medications that simply did not work:

*I think they actually don’t want to be on the medications like I had a patient the other day and he just did not want to be on medications anymore he wanted a different way to manage it.* – C.S

*Some people that have had chronic pain for half their life they don't want to have pain medications anymore.* – A.N

Some respondents acknowledged differences including cultural variations between patients regarding their expression of pain:

*When it came to other especially international people who are not Australian*
... they generally underplayed the pain - - T.S

I had an *Afghan lady* - she would refuse medication and tell you “I have lived long enough” ... *stoicism* ...... *some things are cultural* but then you may other people be congruent in what they are saying how they are feeling. - T.S

It’s just very different between patient to patient and *some people don't want to be on any pain medication* and won’t have it unless they really, really need it. – C.S

### 4.11 Summary

In summary, the interview transcripts reveal that students believed that the knowledge of pain assessment and management learned at university was limited and that the majority of the learning occurred during the clinical practicum. Respondents could not clearly state how much education they received and what it primarily focussed on. Concerning current knowledge level on pain, most students indicated that it was not adequate, but with experience it would improve. Unwillingness to administer analgesics was attributed to disbelief on self-reported patients pain scores when compared to their behaviour and aversion to administering patients with medication who were perceived to be ‘drug-seeking’ or at risk of addiction.
Chapter 5 Discussion

5.1 Introduction

Effective assessment and management of pain is a complex issue that has been an area of concern for many decades. This includes those skills possessed by experienced nurses, graduate nurses and students alike. Evidence suggests that lack of knowledge is the biggest issue for nursing students in providing optimal pain management practises and this is carried on into the workplace once they graduate\textsuperscript{18,250}. This chapter focuses on the results of the current study and discusses findings relating to the research question, that is:

What is the current knowledge and attitudes of Western Australian final semester registered nursing students undertaking a Bachelor of Science (Nursing) towards patients’ pain management?

5.2 Current Knowledge and Attitudes of Registered Nursing Students towards Pain Management.

Findings in the mean scores of current knowledge of pain and pain management from the survey suggest that there is a gap in the knowledge base of this particular group of students. This is particularly related to pharmacological knowledge related to pain management. Examples of this included; nearly two-thirds of respondents did not know the recommended route of opioids for chronic pain, and just over half did not know if non-steroidal anti-inflammatory drugs (NSAIDs) were effective against cancer pain.

Notable deficits in knowledge included analgesic dosing and discerning opioid addiction from tolerance and physical dependence. For example, 74% of respondents
did not know common signs of opioid-related physical dependence after medication
was ceased, 52% believed that respiratory depression was still a risk in patients who
were receiving stable doses of opioids over many months, and similarly 94% thought
that raising opioid doses for a patient who had been on them for two months
significantly raised their risk of respiratory depression.

Questions relating to addiction are the most likely to have a strong component relating
to negative attitudes in nurses. 210 Students having a high rate of incorrect scores for
pharmacological questions is perhaps not surprising as the literature states that nurses
possess insufficient knowledge about basic mechanisms of action of medications,
dosages and uses of pharmaceuticals. 49 Of particular interest was one question where
26% of respondents thought that it was acceptable to give patients sterile water by
injection (placebo) as a useful test to determine if the pain is real. Not only is this the
incorrect answer, but is ethically concerning. The 80% pass mark that was originally set
for the KASRP was not achieved in the vast majority (96%) of cases. Although it can
only be surmised why these results were so low, it may be because this survey was
conducted prior to final clinical practicum. As the data gathered during the interviews
revealed that all of the interviewees believed that most of their knowledge was gained
during their clinical practicum, it could be assumed that if the survey had been re-
administered following the final practicum, the results may have shown an
improvement, however, this is a presumption only.

Previous studies that have also used the KARSP found low scores from this
instrument to be the norm, with many respondents not achieving the 80% pass
mark. These include amongst others, a 2013 study with 162 undergraduate nursing students in Texas where senior students achieved an average of 68%; a 2015 study in Saudi Arabia with varied health professionals where a third of physicians achieved a score of under 44%, and a 2015 study in Zimbabwe concerning pain management of adult medical patients which found that the registered nurses surveyed achieved a mean knowledge score of 64.5% and a total mean attitude score of 56%.

A 2016 review of the literature of the knowledge perceptions and attitudes of pain management for both medical and nursing students found that for the nine studies that used the KARSP or a modified version of it, the majority of students did not reach the recommended minimum of 80%. As part of a master’s thesis conducted in 2015 examining the knowledge and attitudes of nursing students concluded that those respondents who generally achieved higher overall scores were those who had undertaken and completed higher education programs. Explanations by the authors of the 2016 literature review suggested that the low scores may be attributed to the amount of time spent on the subject as well as the delivery mode used to teach pain management in medical and nursing curricula where it may be covered across multiple disciplines, making it a fragmented topic and also making it at risk of having important elements overlooked due to lack of integration across the modules.

This research study concurs with the above findings. The interviews conducted with the respondents confirm this with all respondents agreeing that they could not
remember learning any significant amount on the subject. In addition, examination of the university curriculum showed that there were no discreet units on pain.

5.3 Correlation between Selected Demographics and Current Levels of Knowledge.

The first research question asked whether there was any significant difference between the knowledge base of students compared to characteristics including age, gender, previous/current nursing experience, previous training as an Enrolled Nurse (EN) and if so if they were currently working as an EN. Analysis revealed that no distinctions appeared to exist. The findings of this research provided an insight that indicated that a lack of knowledge existed amongst the nursing students who were surveyed, regardless of their attributes. This was further backed up after examination of the data collected from the interviews.

5.4 Attitudes of Nursing Students towards Pain Management

The second research question explored the attitudes of the same group towards pain management. Questions differentiating knowledge and attitude were not the original intention of the authors of the KASRP; however, it is quite clear from the review of the highest scoring questions that higher marks were scored in questions pertaining more closely to student’s attitudes.

A number of comments were made during the interviews, revealed that while the small cohort of students who were interviewed had some positive outlooks on the management and assessment of pain, there were still some areas where prejudice and bias was evident, especially in administering analgesics to patients whose behaviour was incompatible with their reported pain rating. A key finding from this
research was that students were suspicious of patients who acted contrary to how they thought they should if they reported high pain ratings. Patients they perceived as being truthful regarding their pain scores were more likely to receive the full-prescribed dose of an analgesic than those who were regarded as being untruthful. The student nurses, were likely to label patients as ‘drug-seekers’ if they asked for more pain relief in a time that they thought was too soon to experience pain after the last administration of analgesic. It appeared that nurses acted on intuition and preferred to ‘read’ the patient rather than fully believe their reports of pain and because of this became the gate-keeper making decisions on how much pain relief the patient should receive. A number of respondents thought that the reasons why patients would request increased doses of analgesic were for reasons other than increased pain. The literature concurs with this, with research indicating that nurses often feel that patients are drug seeking, addicted or attention seeking. A 2009 Icelandic study that involved in-depth interviewing of nurses with at least two years of hospital experience found that nurses sometimes doubted the honesty of patients who asked for more medication than the ‘normal’ dose they had been prescribed.

A number of respondents believed that monitoring vital signs was a reliable way of interpreting pain. If vital signs were normal but the patient’s self-report of pain was high, then patients were thought to have given a false pain report. One-fifth of respondents believed that vital signs were a reliable indicator of patient pain, and almost a third believed that patients with severe pain would not be able to sleep. Although it is known that pain does have an adverse effect on the sleep patterns of
sufferers, it is contrary to accepted research that people with long-term pain would not be able to sleep at all.\textsuperscript{135,259}

The case studies revealed mixed student responses. Although one of the patients in the case-study displayed what is commonly regarded as ‘classic’ signs of pain with their facial and physical expression, eleven percent of students failed to correctly identify the self-reported pain scores for either patient. Of interest was the answer to how much morphine students decided each patient would receive. Although both patients reported a high score of 8, patient A (Andrew who was smiling and laughing) was only given the full dose in a fifth of cases and patient B (Robert who was grimacing) was allowed the full dose in almost a third of cases. Research indicates that relying on non-verbal cues is not a reliable way to assess pain.\textsuperscript{113,256} When interviewees were questioned regarding their response, they answered that they thought that prescribed dosages were more a suggestion or sliding scale and full doses of opioid analgesics were not recommended.

5.4.1 The Dilemma of Improving Attitudes

Improving the attitudes of nurses regarding pain and pain management is a complex issue. With research indicating that attitudinal deficits commence in undergraduate nursing education, better teaching and learning techniques focusing on beliefs, values and attitudes in conjunction with pathophysiology and pharmacological treatment of pain may be a step in the right direction toward improved pain management practises.\textsuperscript{260} Socialisation into a professional role is gained by observing professional nursing practises and interactions between nurses, other healthcare professionals and patients. Therefore, attitudes of students are formed
through a process of social learning or constructivism where the interaction of 
people and situations assist in the refinement of skills and knowledge. 54,57

Initial exploration of the individual student’s values and attitudes before 
commencing experience in the clinical setting could guide educators regarding which 
areas to focus their teaching. A 2015 meta-ethnography suggests that reflection to 
explore one’s values, beliefs and attitudes before and after clinical encounters is 
essential in the internalisation of quality values, including empathy and caring 
associated with the profession of nursing. 260 Exploring student attitudes and linking 
them with sound knowledge centered on pain could facilitate positive outcomes in 
these critical areas. Addressing negative attitudes early might be achieved by 
exposing students to realistic case studies and simulation scenarios relating to pain 
while emphasising the role of the student nurse as a patient advocate. Following this 
up with intense debriefing and revisiting of these beliefs after practical placement 
would determine if attitudes and beliefs had altered leading the way to 
reinforcement and a refocus on positive attitudes.

Positive role modelling is essential for nursing students to develop good attitudes; 
however, this is mostly out of the control of the educational facility. If students 
observe negative attitudes and misbeliefs amongst the ward nurses it is very difficult 
for them not to adopt the same types of attitudes. The presumption is that students 
do not necessarily practise what they learn in class but rather learn from nursing 
culture to make judgments about patients. Hall 261 ascertains that when nurses or 
nursing students, as is this case, practise within a particular unit culture, they adopt
the commonly shared beliefs that nurses accept as nursing knowledge. Clinical
decisions that are based on this commonly held knowledge, for example, how a
patient should look or act when they are in pain are based on the ward culture they
experience on practicum and are identified as true knowledge. If these decisions and
attitudes are negative or biased, then it stands to reason that this will foster the same
type of stereotyping and negative attitudes they observe towards opioid
administration and certain patient behaviours. These combined lead to the under-
treatment of pain, and with it an increase in both physical and psychological stress for
the patient.

Skilled communication techniques are a fundamental way in which to determine
patients’ needs. Through empathetic communication, nurses actually listen to the
patient, discovering their needs and may discover other factors contributing to a
patient’s discomfort. Being familiar with, and using pain assessment tools
appropriately and listening to the patient, not just awarding him or her a pain score
out of ten makes pain management a collaborative exercise between patient and
nurse, giving the patient some control over their treatment rather than being solely
reliant on the nurse to make decisions on their care. Skilled, respectful non-
judgmental communication between team members whose aim is to share
knowledge and goals also help to achieve enhanced patient safety and outcomes.
Increased pain management education focusing on these areas may improve
students’ understanding of these concepts and in doing so create better patient
outcomes. With increased accountability for nurses, there is the expectation that
nurses will explore both their own beliefs and the beliefs of their profession, keeping
in mind the *Code of Ethics for Nurses in Australia*, 78 that states -

‘The profession recognises that accepting the principles and standards of human rights in health care domains involves recognising, respecting, actively promoting and safeguarding the right of all people to the highest attainable standard of health as a fundamental human right, and that ‘violations or lack of attention to human rights can have serious health consequences’.

Practical suggestions in which knowledge and attitudes could be addressed will be discussed in chapter 5.6.

**5.5 Gaps in Registered Nurse Education in Relation to Pain Management**

One significant theme that was identified through the interview data was that the participants felt that most of their knowledge on pain was learnt during their clinical practicum and that they found it hard to recall exactly what they had learnt at university. Examination of the university curricula revealed that there were no specific or discrete units on pain so this may have contributed to this perception. The findings of this study are compatible with previously published research, which highlight the widespread knowledge deficits and questionable attitudes of nurses practising within various clinical areas. A 2015 prospective, descriptive, analytical, and cross-sectional study conducted to investigate the knowledge and attitudes regarding pain concluded that for health academic areas including medicine, nursing and dentistry, a subject devoted to the study of pain physiopathology, assessment, diagnosis, and treatment does not exist, but is taught ‘lightly’ in subjects such as physiology and pharmacology. 263 They concluded that low scores gained by nursing students’ in studies that evaluated knowledge of pain management may be due to the limited time devoted to this topic in the nursing curricula.
5.6 Where To From Here?

With a growing awareness that current nursing education may not be providing the most effective learning experiences for nursing students, there is the need to look at new models of teaching and learning. While both the traditional apprenticeship model and the university model have their downfalls, perhaps there is scope to develop new models of teaching and learning.

One of the main concerns around nursing education reported in the literature is the lack of work readiness of graduates, in part attributed to the healthcare system being compromised in providing sufficient clinical practise placements.\textsuperscript{21, 80} This an overarching issue that relates to this thesis because management of pain is such a significant focus for nurses of all levels and in many areas of health. Higher levels of university enrolments in health-related courses have driven a growing demand for clinical placements,\textsuperscript{268} and as a consequence new models for clinical education need to be considered.

In 2009, a landmark publication calling for a change in clinical education was published highlighting a need for improving the preparation of nursing students for practise.\textsuperscript{269} Although a United States publication, the authors called for changes that resonate with the difficulties that the Australian nursing education system is also experiencing, including the need for an integration of theory and practise, reducing decontextualised knowledge focusing on the practise context, emphasis on critical thinking and reasoning and promoting experiential learning environments.\textsuperscript{269} Although broadly identified as issues in contemporary nursing education, these innovations would assist with all curriculum areas including pain assessment and management.
A systematic review conducted by Missen et al.\textsuperscript{80} in 2014, recommended that in order to improve graduate preparedness for practise, a solution may be to create joint partnerships between hospitals and universities creating hospital-based clinical schools of nursing where theory and practical content is taught cooperatively between clinically based educators and academics. Bringing the ‘real world’ into the classroom is thought to prepare students more effectively.\textsuperscript{79}

Similarly, in 2008, Fetherstonhaugh et al.\textsuperscript{270} described various attempts to improve education quality for nursing students including partnership arrangements between students and clinical facilities including secondment of clinicians as clinical teachers to provide intensive support. Familiarity with the agency and a supportive learning environment have also been found to enhance student learning.\textsuperscript{20}

Whilst recommendations cannot be made from the results of a small study such as this one, the following sections offer suggestions on ways in which educational strategies could help improve nursing student’s knowledge and attitudes towards pain and through these produce nursing students that are better prepared for the tasks that are inherent with a nursing career.

5.6.1 Fostering Meaningful Engagement

Meaningful and engaging teaching is imperative in stimulating motivation. One suggested reason why nurses have difficulty in transferring knowledge from classroom
to the clinical setting, is that teaching and learning strategies used by nurse educators
do not promote optimal transfer of knowledge. 271

A 2015 exploratory qualitative study found that by using a variety of teaching
strategies including games and simulation, educators had more success in making their
teaching more meaningful. 59 Vital to this was the teacher being regarded by the
students as being both ‘clinically credible’ and able to manage the class effectively.58
The literature review conducted as part of this study found seven approaches used by
nurse educators to make the learning more meaningful and engaging. Although all
were quite diverse, the common link was the ability to link theory to practical
application. The seven areas were technology and online activities; clinical simulation;
gaming; art; narratives and storytelling; reflection; and problem/context-based
learning. 59 A 2009 study concluded that adult’s motivation to learn is enhanced if
they are actively involved, increasing their ability to apply theory to practise. It was
conjectured that clinical simulation was one way in which this learning could transpire.
272

5.6.2 Greater Use of Simulation

Simulation in nursing education is a teaching and learning strategy that is increasingly
being used to enhance competence and confidence in clinical practise. Faced with a
shortage of quality clinical placements, simulation is one solution to facilitating the
development of work-ready nursing graduates.25 The significance of simulation to this
study lies in the development of self-efficacy brought about through the effective use
of experiential learning activities such as simulation. Based on constructivist learning
principles, the learner is placed at the centre of the experience in simulation activities.
Experiential learning is an important consideration in nursing education with activities that allow the student to have hands-on experience being found to have positive results promoting inclusivity, student-centeredness and application of ‘deeper-learning’.\textsuperscript{76} It has been asserted that substituting high fidelity simulation for up to half of traditional clinical hours produced end of program outcomes that are comparable with traditional methods including work-ready graduates.\textsuperscript{273}

While not all studies concur with the benefits of simulation with mixed reviews existing regarding its effectiveness, there are many that report very favourable outcomes. A 2013 literature review conducted in New Zealand by Edgecombe et al.\textsuperscript{274} evaluated 13 studies and concluded that simulation could be effectively used to consolidate clinical knowledge and skills into practise, however, adherence to carefully constructed scenarios was vital that not only encompassed skills but incorporated clinical decision making and reflective thinking. A 2014 mixed methods study found that through a series of simulation immersion activities where the representation is seen as believable and realistic, students achieved beneficial results in terms of application of theoretical knowledge and transfer of learning.\textsuperscript{271} A 2015 doctoral dissertation also found that there was a positive relationship between increased exposure to clinical simulations and both levels of self-efficacy and basic knowledge in final semester nursing students.\textsuperscript{275} Furthermore, a 2016 review on the use of simulation in undergraduate nursing education further found similar findings to that published by Edgecombe et al in 2013.\textsuperscript{274,276} However this review also suggests that there is a need for methodologically sound research to translate simulation outcomes to future practise.\textsuperscript{274}
Studies such as this support a constructivist approach to learning, with reflection and subsequent debriefing of strengths and weaknesses being an important and vital component of the process. A number of the papers reviewed recommended that for simulation to be successful students must combine prior knowledge with current interactions and share that with their peers in the form of quality debriefing and discussion. Debriefing allows for an active learning opportunity where students examine the simulation, fostering critical thinking and clinical reasoning. This constructivist approach draws on Kolb’s experiential learning cycle theory where students learn by critically reflecting on their actions, and as a result, modify and improve skills and knowledge. There is a motivation to learn and apply knowledge as students can see a relevance of the content. Perceived benefits of actively engaging include superior application of problem solving, experiential learning and greater transfer and retention of clinical knowledge. Cordeau concurs with this, asserting that some studies have shown that the use of simulation in nursing education increases the transference of knowledge from clinical theory to clinical practise by up to 95%.

Not all educators and researchers are convinced by the efficacy of simulation. A research review conducted in 2011 indicated that there is limited evidence on the effectiveness and outcomes. A Norwegian study published in 2013, showed some success with simulation but questioned whether it would be as successful without a high level of enthusiasm and commitment by educators. A similar outcome was found when researchers concluded that safety was an issue when faced with real
patients after using simulation. The authors found that more research was needed to validate it as an effective educational strategy compared with more traditional methods. Although there is a large body of knowledge relating to high fidelity simulation (HFS), there does appear to be here is a lack of research to properly establish a direct cause-and-effect relationship between HFS and learning in undergraduate nursing education and in particular that pertaining directly to pain management.

5.6.3 Use of Reflection

Although guided reflection has been encouraged in nursing education since the 1980s, its prescribed use in nursing curricula is relatively new. Integrating reflective practice into the curriculum is now compulsory with the concept being considered not only useful for providing satisfactory levels of care but as a prerequisite to becoming a professional nurse. The Registered Nurse Standards for Practise updated by the Nursing and Midwifery Board of Australia, in 2016, stipulate the mandatory use of reflection. This is outlined in Standard 1.2 "Thinks critically and analyses nursing practise, which states:

Develops practise through reflection on experiences, knowledge, actions, feelings and beliefs to identify how these shape practise.

Promoting the effectiveness of reflection in bridging the theory-practise divide is a contemporary and innovative approach to training that could be used in all aspects of clinical skills including assessing and managing pain. In nursing, theory forms the basis for understanding practise. For example, if a nurse understands the science behind a pathophysiological event such as the aetiology and source of pain, they are more likely to be effective in treating it and preventing its occurrence. According to Johns,
reflection enables the practitioner to understand and learn through his or her experiences, leading to improved practice for the benefit of the patient.

The concept of reflective practice is not without criticism. According to research conducted by Cavanagh, Hogan, & Ramgopal, 284 some students have difficulty in being able to adequately reflect. In their study of 192 nursing students, it was found that only 46% were classed as reflective thinkers.284 In another study involving the analysis of second-year nursing students’ reflective journals, it was found that the majority of students were capable of only superficial level thinking skills.285 Duffy,70 discovered that many educators also had difficulties in teaching the skills required to effectively reflect. Identified barriers included time constraints, potential student anxiety due to painful previous encounters and possible ethical issues for educators when reviewing student’s reflections. It would appear that further studies are needed in this area to evaluate the benefit of reflection in bridging the theory-practice divide.

5.6.4 Innovative Ways to Teach Pharmacology

Active teaching strategies such as those discussed in the previous chapter are valuable for transferring theory to the practice setting and would be particularly useful in all areas of pain management. The use of simulation and patient scenarios to develop pharmacological reasoning is a way of providing realistic pharmacological decision-making scenarios for patients with complex health issues.286

To safely administer medications it requires more than just calculations and psychomotor skills; nurses require critical thinking and clinical decision-making. Durham-Fowler and Alden16 proposed that incorporating medication administration
into patient simulation scenarios is able to offer numerous learning opportunities and benefits to students. These include the whole realm of administration responsibilities that are known as the ‘six R’s’ including checking that it is the right drug, right dose, right patient, right time, right education given to the patient and or family/carer regarding the medication and the right route to give the drug. The right to refuse is often touted as the seventh R. The strength of this approach is the capacity to see the whole picture, in particular with complex or chronic patients who are taking more than one medication. Scenarios could include being able to identify interactions between prescribed and over the counter (OTC) medications, whether the patient is able to manage a complicated medication regime and what the best administration method may be for particular patients.

An example of a case study scenario is described via a small study of 35 students were involved in a teaching and learning strategy known as ‘The Village’. This hypothetical community was comprised of several families from varied backgrounds that presented with ongoing health issues. Students studied the family members in order to determine pathophysiology and determine the best treatment methods including medications. Ongoing web-based scenarios introduced different families and health issues over the semester. Class discussion was used in conjunction with brief lectures and text readings with lower level questioning commencing early in the semester (knowledge and comprehension) before moving on to higher-level critical thinking skills of application, analysis, synthesis and evaluation. A post-study computer-based pharmacology test was compared with a control group finding significantly higher test scores in the research group. Although a small study, this is
one example of how case-based studies and guided learning and discussion may be used positively to influence learning.

Honey and Lim, 287 recommend strategies for improving pharmacology and medication knowledge that includes improved communication between academic and clinical staff so that preceptors may better understand the needs of the student and provide additional support. Their suggestions include reviewing the curriculum, paying particular attention to integrating pharmacological knowledge that is dynamic and informs understanding of pharmacotherapeutics rather than concentrating on rote learning. They also suggest keeping a reflective journal that students can use to record linkages of theory with practise in regard to medication management. 287 The researchers propose that memorisation is not a particularly effective learning strategy as it is overwhelming for students who engage in this primarily to pass exams. If students concentrate on memorising facts such as medication names and side effects, then fundamental principles tend to be overlooked. 287

Foster et al, 167 suggest that for success in teaching pharmacology, content should be taught using a combination of methods including lectures and linking medications with the pathophysiology via case studies. Pharmacology content should be taught in the clinical setting and reviewed in all courses where students are involved in drug administration with the key to success being effective clinical discussion following scenarios in order to develop deeper understanding and linkages. This encourages ‘deep’ learning as opposed to ‘surface’ learning where mere fact memorisation
Application of knowledge to clinical practice including clinical discussion has been indicated as a key initiative to help narrow the theory-practice gap. Crookes, in her 2015 thesis suggests that emphasis on the practical use of information and knowledge gained in the classroom might aid students to become better engaged with the content. This involves leaving behind more traditional pedagogical models favouring passive lectures to an active model utilizing adult learning principles. This concurs with Kolb’s Experiential Cycle where students gain experiential practice and knowledge and are able to apply it in future situations. Schwertz et al, suggests that a critical aspect to addressing this issue is that pharmacological studies should incorporate ‘pharmacological reasoning’, that is the use of critical thinking and clinical judgement. Although qualified nurses are able to build their knowledge over time with experience, novice nurses do not have these skills and must be vigilant with improving and checking knowledge and assessment skills.

5.6.5 Dedicated Education Units

New approaches in improving clinical learning in order to acquire knowledge and be work ready have led internationally to the development of Dedicated Education Units (DEU). Devoted entirely to nursing students from a single nursing program and staffed by a consistent group of nurses who are provided with professional development to be trained as educators, a Dedicated Education Unit is a partnership between the educational and health facilities drawing on the individual expertise of each party. Designed to provide a positive clinical learning environment, the students are integrated into the team with their clinical instructor being a staff member who
has a vested interest in being concurrently mentor, role model and instructor.\textsuperscript{269,270} This collaborative venture was first pioneered in Australia with the Flinders University of South Australia School of Nursing and has been found to be instrumental in creating a more positive clinical learning environment for both students and clinicians.\textsuperscript{288} Evidence supporting DEUs is encouraging and may be one solution to the theory-practise gap.

A 2017 survey of clinical instructors in the United States (US) unanimously believed that DEU curricula adequately prepares students for practise.\textsuperscript{291} An evaluation of DEUs conducted in 2013 found positive outcomes for students building on a culture of safety and quality with greater growth in clinical learning than those that do not have the benefit of DEU experience.\textsuperscript{292} A 2017 research study where a group of students were involved with a DEU showed greater self-efficacy scores than those who were not.\textsuperscript{27} In 2014, another study compared the perceptions of nurses who participated in the clinical education of students in DEUs and traditional education units and found the benefits of strengthening academic-clinical relationships and producing improved clinical education experiences for students assisting them with reflection and improved skills.\textsuperscript{293}

5.7 Application to Theoretical/Conceptual Framework

Understanding the difference between the two overarching learning theories of pedagogy and andragogy within the context of this study may offer one answer in explaining the low results achieved in the KASRP. There are various aspects contributing to a learner’s ability and readiness to learn. Emotional readiness includes several factors that may hinder a learner’s ability.\textsuperscript{759} The average age of the
respondents for this study were quite young (64% under 23 years of age), however there is no evidence to link low scores with the developmental stage of the students and their readiness to learn. Although one is classified as an adult at 18, a psychological definition as explained by Knowles et al. is that adulthood is gained in degrees with the accumulation of adult-like responsibilities. Thus full self-conceptualisation may not occur until sometime after leaving higher-level studies. This is unlikely, however, as previous studies using the KARSP survey have found similar results with diverse groups of health professionals. In addition, there were no statistical differences in age were discovered between the age groupings in this study.

Self-efficacy as previously discussed, is the belief in one’s own capabilities in successfully accomplishing tasks. Motivation is a major component of self-efficacy. The implications are that if the students are not gaining what they need in order to accomplish their goals then they will potentially fail. In this case, what the students require is the motivation to learn. If the classes are not stimulatory or relevant or taught in a manner that make them memorable then learning will not be successful. Comments from the interviews revealed that students did not believe that they had learnt certain pain and pharmacology knowledge during their university studies. This may be because of the way they learned it initially was primarily in preparation for assessment; corresponding with the belief that rote memorisation does not cause deep or long-term learning to occur. It may also be because all of the six interviewees were in an under 21 years age group that may lack the motivation or not have the critical thinking skills to assimilate theory with clinical skills.
Course content may be judged by students on its’ relevance and depending on where in the course the teaching of this knowledge occurred may influence retention of that knowledge. If it was taught too early then its relevance may not be obvious. Even students, who have learned the skills in the classroom, often feel a level of self-doubt. Self-efficacy is a skill that is acquired with maturity.264

Bandura,264,265 in a paper titled “An agentic perspective on positive psychology” offered four ways to build self-efficacy and it appears that some or all of these are not being met in nursing education. The first is ‘mastery experiences’ – if goals of pain management and assessment are not met due to poor learning opportunities, limited or delayed clinical experiences, this hinders opportunities to gain expertise, experience and ‘mastery’. Achieving a mastery experience is one of the most powerful ways to boost self-efficacy. It has also been suggested that nurses’ confidence in their knowledge directly affects their perceived competence and without experience, it is difficult to feel confident.187

‘Social modelling’ and ‘social persuasion’ both refer to finding the right mentor. With the current state of nurse education where clinical mentors and preceptors can be quite fragmentary, this may be a factor. Meaningful engagement as a result of this has its difficulties both in the tertiary setting and the clinical practise setting. Finally ‘states of physiology’ refer to emotions, moods and physical states.63 This may include anxiety levels, which are commonly known to be high when students are practising in the clinical area, particularly if they feel ill prepared. Anxiety level
may factor into learning ability. Although a moderate level of anxiety is deemed optimal for learning, very severe anxiety, which may include the fear of harming a patient, for example, fear of adverse drug reactions or overdosing with opioids, which may lead to unwillingness to administer. Support systems in the form of nurse educators, clinical facilitators and preceptors as positive role models should assist with anxiety levels and guidance. When students are emotionally supported, receptivity to learning will peak.\textsuperscript{63}

Experiential readiness refers to the learner’s previous learning experiences.\textsuperscript{63} Past accomplishments or failures and the perceived likelihood the student has of repeating them is a huge motivating factor. These are all linked with various factors such as the level of aspiration to achieve, past coping mechanisms, cultural background and locus of control.\textsuperscript{63} Motivation and interest are paramount in the ability to learn. If the student does not have the intention of continuous growth and improvement of performance then task mastery cannot occur.

5.8 Summary

There were a number of findings from this research. These include that student’s level of pain knowledge and assessment is not of a high standard. Interviewees reported that they did not rate themselves highly in terms of knowledge regarding assessment and management of pain. The scores seen in the survey by the entire group backed up this finding. Reasons for the low scores can only be surmised. These could be deficiencies in the curriculum, deficiencies in the way the information was presented or lack of self-efficacy, motivation and maturity in the respondents. Although interviewees unanimously agreed that the bulk of their practical learning was gained
during clinical practicum, it was also on placement that students admitted that they
had observed judgmental attitudes towards patients requesting pain relief. Findings
indicate that respondents have difficulty in accepting patients self-reporting of pain as
truthful if it is incongruous to what they observe. Although nurses are taught that a
patient’s self-report is the most reliable indicator of pain, McCaffery and Robinson, 266
have noted that many clinicians still believe that patients must act like they are in pain
if they are to be believed. The result of what the nurse judged their pain level to be
was indicative of how much pain relief they would receive regardless of the self-
reported score by the patient. This appears to the most common reason why patients
are undertreated for pain. Results of the current study indicate that the nursing
students surveyed held a number of misconceptions and beliefs that are contrary to
accepted best practise. A lack of knowledge and a failure to incorporate knowledge
into assessment and practise resulted in sub-optimal pain management and negative
attitudes towards patients. This was observed in both the survey and the follow
interviews.
Chapter 6 Conclusion

6.1 Introduction

The purpose of this research project was to discover final semester student registered nurses’ knowledge and attitudes regarding pain management by exploring the following:

1. Is there any statistical difference between demographics of age, gender, previous/current nursing experience, previous training as an Enrolled Nurse (EN), currently working as an EN with the study participant’s current levels of knowledge?

2. The attitudes of final year nursing students towards pain management.

This study used a convenience sample of registered nursing students who completed the Knowledge and Attitudes Survey Regarding Pain tool with a demographic data form. This study was designed to provide a basic framework of knowledge deficits and attitudes. This chapter presents a discussion regarding the limitations of the study, implications for nursing practise, and recommendations for further research. Suggestions are offered in relation to improving the situation. Many of these are not short-term solutions but relate to overriding structural change including nursing education curriculum reform. The author suggests that a greater focus on pharmacology and pain physiology with actual patients may be of benefit, contributing to improved understanding of issues such as tolerance, dependence and addiction.

This combined with well-designed simulation and case study scenarios would contribute to increased empathy for patients, enhancing their satisfaction with care and ultimately health outcomes.
6.2 Limitations of the Study

A number of limitations were identified in relation to this study. These are as listed:

1. Students were asked to complete the survey in a research subject class time. As the survey was not essential to their studies, they may have rushed to complete.

2. Due to the small sample size, these findings may be less likely to be generalised.

3. Of the six who agreed to be interviewed, some may have had a higher interest in pain management or it may have been another undisclosed reason. The six that agreed may have had certain biases and opinions that may not be generalised to all respondents.

4. Including the capacity for justification of assessment and management choices in the case study section may have given better insight regarding attitudes towards pain and pain management.

5. The use of closed questions, including true/false and multiple-choice may have limited results due to the element of guessing the answer. Whether the respondents had a comprehensive understanding of the questions could not be determined by the researcher.

6.3 Implications and Recommendations

The findings of this research reflect those of previously published studies confirming that knowledge deficits and attitudinal barriers do exist. Based on the review of relevant literature, there appear to be deficits in pain assessment and knowledge as well as attitudinal barriers that prevent patients from receiving the highest quality of care and optimal outcomes, particularly around chronic pain. There looks to be a
confirmed need for innovative and effective pain management education for all nurses at all levels; however, it is of concern that some nursing students are entering the profession lacking an adequate knowledge base. While studies confirm that clinical experience is the most significant factor affecting nurse’s knowledge and confidence in managing patient’s pain, this is something that graduates need to build on. Experience is only gained with time and commitment, however commencing a career with inadequate knowledge and limited expertise has the potential for delivery of inferior care leading to poor patient outcomes.

As one of the most trusted professions, nursing has an important responsibility in providing quality care and outcomes for vulnerable patients suffering pain. Misconceptions, particularly in relation to opioids and addiction, may be taught at the university level but it appears that these are overshadowed by the practical experience if the nurse the student ‘buddies’ with has inaccurate and biased understandings of the amount and type of pain that a particular patient is experiencing. These attitudes are easily conveyed and picked up by novice nursing students. Studies have demonstrated that negative clinical experiences have marked effects on trust, attitude, and students learning in clinical settings. Knowledge and skills in assessing pain are important aspects of training for all undergraduate nursing students. However, if long-term practise changes are to succeed there needs to be an in-depth examination of the curriculum to ensure that equal importance is placed on the instruction of all aspects of the topic including nursing students’ beliefs surrounding pain.
A thorough review of the nursing curricula needs to be undertaken at the undergraduate level to ensure that the content of the units provides up to date, relevant and adequate information to enable novice nurses to effectively manage pain. Standardised pain management protocols incorporating best practise across all clinical areas and in all universities, would aid in regulating the way nurses approached the task of assessing and managing pain. Allowing the students to know the patients as ‘real people’ rather than just their ailment may be another step in the right direction.

The findings of this research are significant as it supports previous studies that have been conducted with diverse groups of health professionals. Although no explicit new knowledge has been generated as a result of this study, it does support previous studies and also gains a small insight in to the state of education in pain management in these two universities. Although a small cohort, the findings may offer supporting evidence for universities to look at alternative ways of teaching and learning in the area of pain knowledge and assessment. Examining and improving attitudes of nursing students in order to enhance outcomes for both the students themselves and also for their patients can only contribute to superior care and satisfaction. Providing healthcare facilities with job-ready graduates offers well educated and prepared employees that experience greater role satisfaction through being able to confidently link theory with practise whilst displaying greater self-efficacy.

Due to the limitations of the study, it is recommended that it be repeated with larger cohorts in other Australian Universities at several stages of the undergraduate
nursing education so as to gain an all-inclusive insight into potential factors that may impact on nurses’ knowledge and attitudes regarding pain and its management. Conducting a longitudinal study over an extended period of time with subsequent students may enhance credibility. Investigating whether strategies aimed at improving outcomes were successful could be part of another study, even exploring the situation from the patient’s viewpoint. Initiatives aimed at pain management education programs involving all levels of nurses from students to graduates to experienced nurses may assist with implementing best practise and international strategies and policies.

6.4 Conclusion

The results of this study indicate that there are challenges to both curriculum content and the theory-practise gap resulting in inadequate pain assessment and management. According to the Nurses and Midwifery Board of Australia, all nurses have a responsibility to provide high quality nursing care that demonstrates empathy and trust and interact in a supportive manner for all of those who are in their care. They must use a range of data-gathering techniques in order to arrive at an accurate assessment in order to provide appropriate pain management. While the experience of pain is subjective and complicated, thorough and complete assessment is a key to effective pain management, and nurses should never assume that patients are less than accurate when describing their pain. It remains the right of the individual to have their pain addressed promptly, comprehensively and without bias by both nurses and other healthcare professionals. It is vital that nurses not only commence their professional practise with the essential knowledge, skills
and attitudes regarding pain and pain management, but also continue to build upon this knowledge throughout their careers.
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Appendices

Appendix 1: Ethics Approval

Our Ref: RA/4/1/8069

30 March 2016

Professor Sandra Carr
Faculty of Medicine, Dentistry and Health Sciences
MBDP: M515

Dear Professor Carr,

HUMAN RESEARCH ETHICS APPROVAL - THE UNIVERSITY OF WESTERN AUSTRALIA

What is the current knowledge and attitudes of Australian final semester Registered Nursing students regarding pain management?

Student(s): Jodie Watkins - Masters - 10530980

Ethics approval for the above project has been granted in accordance with the requirements of the National Statement on Ethical Conduct in Human Research (National Statement) and the policies and procedures of The University of Western Australia. Please note that the period of ethics approval for this project is five (5) years from the date of this notification. However, ethics approval is conditional upon the submission of satisfactory progress reports by the designated renewal date. Therefore initial approval has been granted from 30 March 2016 to 29 March 2017.

You are reminded of the following requirements:

1. The application and all supporting documentation form the basis of the ethics approval and you must not depart from the research protocol that has been approved.
2. The Human Ethics office must be approached for approval in advance for any requested amendments to the approved research protocol.
3. The Chief Investigator is required to report immediately to the Human Ethics office any adverse or unexpected event or any other event that may impact on the ethics approval for the project.
4. The Chief Investigator must submit a final report upon project completion, even if a research project is discontinued before the anticipated date of completion.

Any conditions of ethics approval that have been imposed are listed below:

Special Conditions

None specified

The University of Western Australia is bound by the National Statement to monitor the progress of all approved projects until completion to ensure continued compliance with ethical principles.

The Human Ethics office will forward a request for a Progress Report approximately 30 days before the due date.

If you have any queries please contact the Human Ethics office at humanethics@uwa.edu.au.

Please ensure that you quote the file reference – RA/4/1/8069 – and the associated project title in all future correspondence.
Yours sincerely

Dr Canis Li
Manager, Human Ethics
Dear...

I would like to introduce myself as a Masters student in the Faculty of Medicine, Dentistry and Health Sciences at the University of Western Australia and a nursing lecturer of 16 years' experience at the Great Southern Institute of Nursing (Albany) teaching both RN students (Curtin based) and the Diploma of Nursing.

I am sure that you are aware as part of continuing ANMAC requirements all lecturers who wish to teach at university level must have their Masters degrees by 2017. As a result of this and an interest in pain management I have elected to do my Masters by Research.

My project title is: "What is the current knowledge and attitudes of Australian final semester Registered Nursing students regarding pain management?"

This is a research study exploring final year Registered Nursing students' current knowledge and attitudes regarding pain management. In order to carry out this research I would like to invite final semester Registered Nursing students to fill out either an online or a paper based questionnaire exploring assessment, management and attitudes towards pain. This will take approximately 20 - 30 minutes to complete. This will also involve collecting demographic data including age, gender, previous nursing education and nursing work experience.

If you are amicable to my distributing this questionnaire to your students I can forward further information pertaining to participant consent and information and the tool itself for you to consider. There is scope for this research to be published.

Also I need to know if this proposal would have to be put through your ethics committee and if so what do I need to do to facilitate this process? I have provisional approval from UWA.

I hope to hear from you soon.

Kindest regards,

Jodie Watkins
Appendix 3: Participant Information Letter

Participant Information Form

Project Title: What is the current knowledge and attitudes of Australian final semester Registered Nursing students regarding pain management?

 Investigators: Jodie Watkins – Masters in Health Professional Education Research Student
  Contact Person: Jodie Watkins
  Phone: 0427423973

Email: I would like to invite you to participate in a research study exploring final year Registered Nursing student’s current knowledge and attitudes regarding pain management. You have been identified as a suitable participant due to you being enrolled in your final semester clinical practicum unit. If you agree to participate in this study, you will be asked to complete the following tasks:

Part A of the study will involve filling out an online questionnaire exploring assessment, management and attitudes towards pain. This will take approximately 20 - 30 minutes to complete. This will also involve collecting demographic data including age, gender, previous nursing education and nursing work experience.

Part B of the study will involve engaging in a short follow up interview with the researcher. You will only be contacted if you consent to this in the attached consent form. This interview may be conducted face to face, via telephone or Skype and will be used to explore your attitudes and feelings in greater depth. If you agree, a researcher will also contact you 4-6 weeks after the initial questionnaire.

All information is strictly confidential, and the questionnaire and interview data will be coded and de-identified. No individual responses or the status of your consent to participate will be made available to the university or teaching staff within your degree. All hard copy and electronic data will be securely stored in a locked cupboard at the Faculty Education Centre to maintain confidentiality.

Participation is voluntary. It is possible that there may be no direct benefit to you from your participation in this research; however, the knowledge gained from your participation may enhance your understanding of your attitudes towards pain assessment and management. The results of this study may act as a catalyst for changes and potential development of educational tools in current and future nursing curricula to enhance pain management practise in nursing students.

You have the right to withdraw your consent to participate at any time during the research. You may withdraw at any time without reason and without prejudice. As a participant of this study there will be no impact on your university course. If you are willing to consent to participate in this study, please complete the attached consent form.

Approval to conduct this research has been provided by The University of Western Australia, in accordance with its ethics review and approval procedures. Any person considering participation in this research project, or agreeing to participate, may raise any questions or issues with a member of the research team using the contact details above. In addition, any person not satisfied with the response of researchers may raise ethics issues or concerns, and may make any complaints about this research project by contacting the Human Research Ethics Office at The University of Western Australia on (08) 6488 3703 or by emailing to hreo-research@uwa.edu.au. All research participants are entitled to retain a copy of any Participant Information Form and/or Participant Consent Form relating to this research project.
Participant Consent Form

I have read the information provided and any questions I have asked have been answered to my satisfaction. I agree to participate in the research proposed and understand that I may withdraw my participation at any time without reason and without prejudice.

I understand that all information provided through the completion of surveys is treated as strictly confidential and will not be released by the investigator. I have been advised as to what data is being collected, what the purpose is, and what will be done with the data upon completion of the research.

I agree that research data gathered for the study may be published provided my name or other identifying information is not used.

I consent to being contacted after the initial questionnaire for the researcher to collect follow up data. YES/NO

If yes, please supply preferred contact details:

Email: ________________________________

Phone number: ________________________________

Participant sign ________________ Date ________________

If you have any queries in relation to this research please contact Professor Sandra Carr (Sandra.carr@uwa.edu.au, ph 6488 6892) or Jodie Watkins a postgraduate student at UWA, this study forms part of her Master of Health Professional Education (jodie.watkins@research.uwa.edu.au, ph 0427423973).

"Approval to conduct this research has been provided by the University of Western Australia, in accordance with its ethics review and approval procedures. Any person considering participation in this research project, or agreeing to participate, may raise any questions or issues with the researchers at any time. In addition, any person not satisfied with the response of researchers may raise ethics issues or concerns, and may make any complaints about this research project by contacting the Human Research Ethics Office at the University of Western Australia on (08) 6488 1610, or (08) 6488 3793, or by emailing hrso.research@uwa.edu.au"

All study participants will be provided with a copy of the information sheet and consent form for their personal records.
Appendix 5: Demographic Data

Thank you for agreeing to take part in this study that aims to research the current knowledge and attitudes of Australian final semester Registered Nursing students regarding management of chronic pain.

For our data please fill in the following questions. Remember all information is strictly confidential.

Name: (optional)
Age:
Gender:
Do you consent to the researcher contacting you for a follow up verbal interview? This may take place face to face, via telephone or skype. YES/NO
Do you have previous nursing or caring experience before commencing your training as a RN? YES/NO
Are you currently working in the health industry? YES/NO
Did you receive your qualification overseas? YES/NO
If yes, what country were you qualified in?
What is your qualification?
If you are currently working or have worked in the health industry, what was your role? Please tick or circle below.
Enrolled Nurse
Assistant in Nursing
Patient Care Assistant
Aged Carer
Other
If other please state what it was.
If it was as an Enrolled Nurse, are you?
Qualified but never worked as an EN? YES/NO
Qualified and worked as an EN? YES/NO
Please state how many years you have worked in the health profession.
Appendix 6: Knowledge and Attitudes Survey Regarding Pain (KASRP) (Amended)
This tool by McCaffery M, Ferrell B. has been adapted for an Australian context.
The original can be found at City of Hope http://prc.coh.org/res_inst.asp

True/False – Circle the correct answer.

T  F  1. Vital signs are always reliable indicators of the intensity of a patient’s pain.
T  F  2. Patients who can be distracted from pain usually do not have severe pain.
T  F  3. Patients may sleep in spite of severe pain.
T  F  4. Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.
T  F  5. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.
T  F  6. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.
T  F  7. The usual duration of analgesic of 1-2 mg morphine IV is 4-5 hours.
T  F  8. Research shows that promethazine (Phenergan) are reliable potentiators of opioid analgesics.
T  F  9. Opioids should not be used in patients with a history of substance abuse.
T  F  10. Elderly patients cannot tolerate opioids for pain relief.
T  F  11. Patients should be encouraged to endure as much pain as possible before using an opioid.
T  F  12. Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.
T  F  13. Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.
T  F  14. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.
T  F  15. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.
T  F  16. 50mg Tramadol PO is approximately equal to 5-10 mg of morphine PO.
T  F  17. If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.
T  F  18. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.
T  F  19. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.
T  F  20. Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.
21. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is:
   a. intravenous
   b. intramuscular
   c. subcutaneous
   d. oral
   e. rectal

22. The recommended route administration of opioid analgesics for patients with chronic pain is:
   a. intravenous
   b. intramuscular
   c. subcutaneous
   d. oral
   e. rectal
   f. transdermal

23. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
   a. codeine
   b. morphine
   c. meperidine
   d. tramadol

24. Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given q 4 hours?
   a. Morphine 5 mg IV
   b. Morphine 10 mg IV
   c. Morphine 30 mg IV
   d. Morphine 60 mg IV
25. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is:
   a. less than 1%
   b. 1-10%
   c. 11-20%
   d. 21-40%
   e. > 41%

26. The most likely reason a patient with pain would request increased doses of pain medication is:
   a. The patient is experiencing increased pain.
   b. The patient is experiencing increased anxiety or depression.
   c. The patient is requesting more staff attention.
   d. The patient’s requests are related to addiction.

27. Which of the following is useful for treatment of cancer pain?
   a. Ibuprofen (Motrin)
   b. Hydromorphone (Dilaudid)
   c. Gabapentin (Neurontin)
   d. All of the above

28. The most accurate judge of the intensity of the patient’s pain is:
   a. the treating physician
   b. the patient’s primary nurse
   c. the patient
   d. the pharmacist
   e. the patient’s spouse or family

29. Which of the following describes the best approach for cultural considerations in caring for patients in pain?
   a. There are no longer cultural influences in Australia due to the diversity of the population.
   b. Cultural influences can be determined by an individual’s ethnicity (e.g., Asians are stoic, Italians are expressive, etc).
   c. Patients should be individually assessed to determine cultural influences.
   d. Cultural influences can be determined by an individual’s socioeconomic status (e.g., blue collar workers report more pain than white collar workers).
30. The time to peak effect for morphine given IV is:
   
   a. 15 min.
   b. 45 min.
   c. 1 hour
   d. 2 hours

31. The time to peak effect for morphine given orally is:

   a. 5 min.
   b. 30 min.
   c. 1 – 2 hours
   d. 3 hours

32. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:

   a. sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued
   b. Impaired control over drug use, compulsive use, and craving
   c. The need for higher doses to achieve the same effect.
   d. a and b
Case Studies

Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

Directions: Please select one answer for each question.

Patient A: Mr. Andrews is 65 years old and he has been admitted to the ward with chronic arterial ulcers to his left and right lower legs.
As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80;
HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

33. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.

![Pain Scale]

34. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesic is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.

a. Administer no morphine at this time.
b. Administer morphine 1 mg IV now.
c. Administer morphine 2 mg IV now.
d. Administer morphine 3 mg IV now.
35. Patient B: Mr. Roberts is 65 years old and he has been admitted to the ward with chronic arterial ulcers to his left and right lower legs.
As you enter his room, he is lying quietly in bed and grimaces as he turns in bed.
Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert’s pain:

- [ ] 0
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5
- [ ] 6
- [ ] 7
- [ ] 8
- [ ] 9
- [ ] 10

NO PAIN

WORST POSSIBLE PAIN

36. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesic is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time:

a. Administer no morphine at this time.
b. Administer morphine 1 mg IV now.
c. Administer morphine 2 mg IV now.
d. Administer morphine 3 mg IV now.
Appendix 7: Knowledge and Attitudes Survey Regarding Pain – Marking Key

True/False – Circle the correct answer.

F 1. Vital signs are always reliable indicators of the intensity of a patient’s pain.

F 2. Patients who can be distracted from pain usually do not have severe pain.

T 3. Patients may sleep in spite of severe pain.

F 4. Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.

T 5. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

T 6. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.

F 7. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.

F 8. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics.

F 9. Opioids should not be used in patients with a history of substance abuse.

F 10. Elderly patients cannot tolerate opioids for pain relief.

F 11. Patients should be encouraged to endure as much pain as possible before using an opioid.

F 12. Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.

T 13. Patient’s spiritual beliefs may lead them to think pain and suffering are necessary.

T 14. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.

F 15. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.

T 16. True 50mg Tramadol PO is approximately equal to 5-10 mg of morphine.

F 17. If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.

F 18. Anticonvulsant

T 19. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.
T 20. Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving

**Multiple Choice – Place a check by the correct answer.**

21. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is
   a. intravenous
   b. intramuscular
   c. subcutaneous
   d. oral
   X e. rectal

22. The recommended route of administration of opioid analgesics for patients with chronic pain is:
   a. intravenous
   b. intramuscular
   c. subcutaneous
   X d. oral
   e. rectal

23. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
   a. codeine
   X b. morphine
   c. meperidine
   d. tramadol

24. Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given q 4 hours
   a. Morphine 5 mg IV
   X b. Morphine 10 mg IV
   c. Morphine 30 mg IV
   d. Morphine 60 mg IV

25. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is
   X a. less than 1%
   b. 1-10%
   c. 11-20%
   d. 21-40%
   e. > 41%

26. The most likely reason a patient with pain would request increased doses of pain medication is
   X a. The patient is experiencing increased pain.
   b. The patient is experiencing increased anxiety or depression.
   c. The patient is requesting more staff attention.
   d. The patient’s requests are related to addiction.
27. Which of the following is useful for treatment of cancer pain?
   a. Ibuprofen (Motrin)
   b. Oxycodone
   c. Gabapentin (Neurontin)
   X d. All of the above

28. The most accurate judge of the intensity of the patient’s pain is
   a. the treating physician
   b. the patient’s primary nurse
   X c. the patient
   d. the pharmacist
   e. the patient’s spouse or family

29. Which of the following describes the best approach for cultural considerations in caring for patients in pain:
   a. There are no longer cultural influences in the U.S. due to the diversity of population.
   b. Cultural influences can be determined by an individual’s ethnicity (e.g., Asians are stoic, Italians are expressive, etc).
   X c. Patients should be individually assessed to determine cultural influences.
   d. Cultural influences can be determined by an individual’s socioeconomic status (e.g., blue collar workers report more pain than white collar workers).

30. The time to peak effect for morphine given IV is
   X_ a. 15 min.
   b. 45 min.
   c. 1 hour
   d. 2 hours

31. The time to peak effect for morphine given orally is
   a. 5 min.
   x. 30 min
   c. 1 – 2 hours
   d. 3 hours

32. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:
   X_ a. sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued
   b. Impaired control over drug use, compulsive use, and craving
   c. The need for higher doses to achieve the same effect.
   d. a and b

Case Studies
Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.
Directions: Please select one answer for each question.
33. Patient A: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.
A. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.

Answer is 8

34. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.
1. Administer no morphine at this time.
2. Administer morphine 1 mg IV now.
3. Administer morphine 2 mg IV now.
X 4. Administer morphine 3 mg IV now.

35. Patient B: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.
A. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert’s pain:

Answer is 8

36. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesic is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time:
1. Administer no morphine at this time.
2. Administer morphine 1 mg IV now.
3. Administer morphine 2 mg IV now.
X 4. Administer morphine 3 mg IV now.
Appendix 8: Knowledge and Attitudes Survey Regarding Pain (KASRP) (Original)

October 2012

The “Knowledge and Attitudes Survey Regarding Pain” tool can be used to assess nurses and other professionals in your setting and as a pre and post test evaluation measure for educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool has been revised over the years to reflect changes in pain management practise.

Regarding issues of reliability and validity: This tool has been developed over several years. Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the National Comprehensive Cancer Network Pain Guidelines. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established ($r>.80$) by repeat testing in a continuing education class of staff nurses ($N=60$). Internal consistency reliability was established ($alpha r>.70$) with items reflecting both knowledge and attitude domains.

Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measures both knowledge of addiction and attitude about addiction. Therefore, we have found the most benefit to be gained from analyzing the data in terms of the percentage of complete scores as well as in analyzing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores to guide your educational needs.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below. We have received hundreds of requests for the tool and additional use of the tool can be found in other published literature.

We also acknowledge the assistance of several of our pain colleagues including Pam Kedziera, Judy Paice, Deb Gordon, June Dahl, Hob Osterlund, C.S Pasero, Pat Coyne and Nessa Coyle in the revisions over the years. If using or publishing the tool results please cite the reference as “Knowledge and Attitudes Survey Regarding Pain” developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (http://prc.coh.org), revised 2012.

We hope that our tool will be a useful aid in your efforts to improve pain management in your setting.

Sincerely,

Betty R. Ferrell, RN, PhD, FAAN Margo McCaffery, RN, MS, FAAN Research Scientist Lecturer and Consultant
References:


Knowledge and Attitudes Survey

Regarding Pain

**True/False—Circle the correct answer.**

decreased pain sensitivity and limited memory of painful experiences.

3. Patients who can be distracted from pain usually do not have severe pain.

4. Patients may sleep in spite of severe pain.

5. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.

6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

7. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects.

8. The usual duration of analgesia of 1-2 mg morphine IV is 4 hours.

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

10. Opioids should not be used in patients with a history of substance abuse.

11. Elderly patients cannot tolerate opioids for pain relief.

12. Patients should be encouraged to endure as much pain as possible before using an opioid.

13. Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.

14. Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.

15. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.

16. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.

17. Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO.

18. If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to identify the cause of the pain.

19. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.

20. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.

21. Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and legal problems related to use.
Multiple Choice – Place a check by the correct answer.

22. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is
   a. intravenous
   b. intramuscular
   c. subcutaneous
   d. oral
   e. rectal

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

24. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
   a. codeine
   b. morphine
   c. meperidine
   d. tramadol

25. Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg of oral morphine given q 4 hours?
   a. Morphine 5 mg IV
   b. Morphine 10 mg IV
   c. Morphine 30 mg IV
   d. Morphine 60 mg IV

26. Analgesics for post-operative pain should initially be given
   a. around the clock on a fixed schedule
   b. only when the patient asks for the medication
   c. only when the nurse determines that the patient has moderate or greater discomfort

27. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is
   a. less than 1%
   b. 1-10%
   c. 11-20%
   d. 21-40%
   e. > 41%

28. The most likely reason a patient with pain would request increased doses of pain medication is
   a. The patient is experiencing increased pain.
   b. The patient is experiencing increased anxiety or depression.
   c. The patient is requesting more staff attention.
   d. The patient’s requests are related to addiction.

29. Which of the following is useful for treatment of cancer pain?
   a. Ibuprofen (Motrin)
   b. Hydromorphone (Dilaudid)
   c. Gabapentin (Neurontin)
   d. All of the above
30. The most accurate judge of the intensity of the patient’s pain is
   a. the treating physician
   b. the patient’s primary nurse
   c. the patient
   d. the pharmacist
   e. the patient’s spouse or family

31. Which of the following describes the best approach for cultural considerations in caring for patients in pain:
   a. There are no longer cultural influences in the U.S. due to the diversity of the population.
   b. Cultural influences can be determined by an individual’s ethnicity (e.g., Asians are stoic, Italians are expressive, etc).
   c. Patients should be individually assessed to determine cultural influences.
   d. Cultural influences can be determined by an individual’s socioeconomic status (e.g., blue collar workers report more pain than white collar workers).

32. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?

   < 1%  5 – 15%  25 - 50%  75 - 100%

33. The time to peak effect for morphine given IV is
   a. 15 min.
   b. 45 min.
   c. 1 hour
   d. 2 hours

34. The time to peak effect for morphine given orally is
   a. 5 min.
   b. 30 min.
   c. 1 – 2 hours
   d. 3 hours

35. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:
   a. sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued
   b. Impaired control over drug use, compulsive use, and craving
   c. The need for higher doses to achieve the same effect.
   d. a and b
Case Studies

Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

Directions: Please select one answer for each question.

36. **Patient A:** Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

**A.** On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>10</th>
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<tbody>
<tr>
<td>No pain/discomfort</td>
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<td>Worst Pain/discomfort</td>
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</tbody>
</table>

**B.** Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.

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

37. **Patient B:** Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

**A.** On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert’s pain:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
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<tr>
<td>No pain/discomfort</td>
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**B.** Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time:

1. Administer no morphine at this time.
2. Administer morphine 1 mg IV now.
3. Administer morphine 2 mg IV now.
4. Administer morphine 3 mg IV now.
Appendix 9: Verbal Interview Question Guide

The verbal interview will commence with checking the demographic data that was given in the written questionnaire with the respondent to ensure that it is correct.

Questions will be for the most part open-ended and will include:

- Can you tell me about the experience you have had in healthcare prior to starting this course?
- Where and in what role?
- How many years?
- During the course?
- Explain
- Ask what they would rate their knowledge on pain assessment and management – scale 1-10
- Explain the reason why they gave that score?
- Where have you gained most of your knowledge on pain?
- Can you recall how much education you have you have in your undergraduate course on pain management?
- Was it a unit on its own or was it part of other units?
- What was its focus?

Chronic Vs acute/ Pharmacological Vs non-pharmacological

- Do you think you had adequate education in this area?
- Explain.
- Scale 1-10
- What are the therapies you would use for pain?
- Knowledge and use of non-pharmacological methods?
- Which ones?
- Is there anything that prevents you from not using non-pharmacological methods of pain relief?
- Do you think patients are always truthful in rating their pain?
• Explain....

• Have you ever withheld medication because you believe that the patient is not telling the truth?

• If yes – expand.

• Have you ever seen or heard of other nurses withholding medication?

• What do you think the general attitude nurses have to pain management is?

Case Studies

Remind them of the case study scenario and ask the following.

• What is your rationale for giving the pain rating scores you did for each of the patients?

• What was your rationale for selecting the amount of analgesia?

• What was your rationale for administering differing amounts of analgesia to each patient?
Appendix 10: The Numeric Rating Scale

The Numeric Pain Rating Scale Instructions

General Information:
- The patient is asked to make three pain ratings, corresponding to current, best and worst pain experienced over the past 24 hours.
- The average of the 3 ratings was used to represent the patient’s level of pain over the previous 24 hours.

Patient Instructions (adapted from McCaffery, Beebe et al., 1989):
"Please indicate the intensity of current, best, and worst pain levels over the past 24 hours on a scale of 0 (no pain) to 10 (worst pain imaginable)"

Reference:
Appendix 11: Wong-Baker FACES Pain Rating Scale

Wong-Baker FACES® Pain Rating Scale

0  2  4  6  8  10
No Hurt  Hurts Little Bit  Hurts Little More  Hurts Even More  Hurts Whole Lot  Hurts Worst

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