

The Knowledge, Attitudes and Barriers amongst Health Professionals Regarding Acute
and Chronic Pain Management in Children: An Integrative Review

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Abstract

Pain is one of the most common causes for people to seek healthcare and the management of pain is challenging. Both acute and chronic pain is highly prevalent in children presenting to healthcare facilities. Health professionals play a vital role in the assessment and management of pain in children. Everyone within the healthcare team is responsible for the management of pain. There is mounting evidence to suggest the under treatment of acute pain in children can have consequences and lead to issues with chronic pain in the long-term. Despite this, pain in children continues to be poorly assessed and managed by health professionals.

This integrative review aimed to explore the knowledge, attitudes and barriers amongst health professionals regarding acute and chronic pain management in children. The integrative review method was used and was guided by Whittemore and Knafl's five-stage framework. The five stages of this method are; identification of problems, searching the literature, evaluating data, analysing the collected data and finally presenting the findings. Each included study was independently critically appraised using the Mixed Methods Appraisal Tool. Nine relevant studies were included in this review. Five of these were quantitative, three were qualitative and one was a mixed-methods study.

The findings of this integrative review highlighted that paediatric pain assessment and management is suboptimal and the knowledge and attitudes of health professionals remains unsatisfactory. Barriers to effective pain assessment and management in children still exist. These barriers are mainly due to factors such as lack of pain education content at undergraduate level for health professionals. Furthermore, pain assessment tools are under-utilised and there is a fear of using opioids in children amongst health professionals. Many myths about pain in children still exist that hinder

appropriate treatment of pain in this population group. This integrative review provided evidence to develop a framework to guide health professionals' practice that is specifically aimed at improving acute and chronic pain management in children.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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CHAPTER ONE: INTRODUCTION

Background

Pain is one of the most common causes for people to seek healthcare and the management of pain is challenging (Leny Cahyani, Yaputra & Eka Widyadharma, 2018). The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage” (IASP, 1979 p. 249). This definition of pain highlights that pain is not just an act of nerve cell activity, and it emphasises the importance of higher-level thought processes that help clarify and characterise the pain for those experiencing it (Tompkins, Hobelmann & Compton, 2017). Pain can be characterised as acute, which is usually associated with tissue injury, disease or surgical procedures (Zeller, Burke & Glass, 2008), while chronic or persistent pain is characterised as pain happening continually or frequently for three months or more (King et al., 2011). Chronic pain in children and adolescents is a major problem globally, with prevalence rates ranging from 6% to 37% depending on the reporting period and the concept of chronic pain (King et al., 2011). Both acute and chronic pain is highly prevalent in children presenting to healthcare facilities (Hurley-Wallace, Wood, Franck, Howard, & Lioffi, 2019).

The physiological effects that may occur from unrelieved pain caused by the prolonged stress include delayed healing, impaired respiratory function, increased heart rate, decreased gastrointestinal motility and decreased urinary function (Berry et al., 2000). Pain interferes with mood, sleep, appetite, attendance at school, academic performance and involvement in sports and other extracurricular activities. Hence, pain can have a significant impact on the quality of life of children (Mathews, 2011). In addition,

ineffectively managed pain in this population can prompt issues with persistent pain and psychological well-being into adulthood and it can present significant expenses to society (Shelby et al., 2013). Effective pain management has been correlated with increased patient satisfaction, better clinical outcomes, fewer clinical complications, and overall cost reduction (Johnson, Borsheski & Reeves-Viets, 2013).

Under-treatment of children's pain is associated with misconceptions among health professionals. One such misconception is that children, particularly babies, experience less pain than adults (Mathews, 2011). However, it is now known that at 20 weeks' gestation, the sensory nervous system's response to certain harmful stimuli, the nociceptive system, starts functioning (Anand, Stevens & McGrath, 2007). Despite these nociceptors being fully developed in preterm babies and adults, there are some differences in how they function and as a result the child may sense and perceive pain differently to an adult (Hatfield, 2014). Children's understanding of pain may also differ from how adults understand pain. Children may be affected by different psychological and emotional factors compared to adults and this may stimulate their pain response (Pancekauskaitė & Jankauskaitė, 2018). Every year, to increase awareness of pain the IASP focuses on a different area of pain that has an impact globally. In view of such misconceptions regarding children's pain, the IASP highlighted 'Pain in Children' as the theme of 'Global Day Against Pain 2005' (Lipman, 2005). This theme was supported throughout the year with updated publications and clinical updates related to pain in children.

In 2004 the World Health Organisation (WHO) and the IASP jointly declared that every person has the right to pain relief (Brennan, Carr & Cousins, 2007). Additionally, at a pain summit in 2010 hosted by the IASP, it was acknowledged that pain

management was suboptimal in most parts of the world and that there was a lack of knowledge of the mechanisms of pain and pain management among health professionals. In 2010, it was also declared that it is a fundamental human right to have access to pain management (Cousins & Lynch, 2011). Despite the clear directives of international and professional bodies for appropriate approaches and evidence-based solutions to pain management in the paediatric population, pain in children continues to be misunderstood and undertreated (Mathews, 2011; Friedrichsdorf et al., 2015; Postier et al., 2018).

Historically there were many beliefs that infants do not feel pain or feel pain less than adults. In 1848 Henry Bigelow, a surgeon at Harvard Medical School conducted a review on the use of ether for surgery on infants. The review concluded that infants do not feel pain and they have no memory of pain suggesting that operations could be performed soon after birth (Rodkey & Pillai Riddell, 2013). This notion was supported by Peirson in 1852 and Genzmer in 1873. Genzmer performed an experiment which involved poking infants with pins to assess their response, and concluded that children showed no signs of discomfort and were insensitive to pain (Rodkey & Pillai Riddell, 2013). Many similar experiments were performed on infants during the early years of the 20th century. These added to the misconceptions and resulted in research and clinical practice related to pain in infants being marked by scepticism during this period (Rodkey & Pillai Riddell, 2013). Further studies performed in the 1980s increased physician awareness and understanding regarding how infants were affected by painful stimuli and that infants in fact required adequate pain relief (Pabis, Kowalczyk & Kulik, 2010).

Assessing and treating pain in children can be very challenging for health professionals. Many factors must be considered including the child's age, developmental level, cognitive ability, communication skills and any previous pain-related experiences (Srouji, Ratnapalan & Schneeweiss, 2010). Various paediatric pain assessment tools have been developed and are being used for children of all ages including neonates to adolescents. These tools take into account the aforementioned factors. For neonates and infants, pain is assessed based on the behaviour of the child. The FLACC (face, leg, activity, consolability and cry) pain measurement tool is reliable and validated and is also suitable for use in older children who cannot verbalise pain. Using this tool, the staff score the child's pain while observing their behaviours (Merkel, Voepel-Lewis & Malviya, 2002). Pain is subjective and therefore, self-report of pain should be obtained if possible once the child is old enough to communicate pain verbally (Committee on Psychosocial Aspects of Child and Family Health, 2001). The self-report tools rate pain on a graded continuum from 0 (no pain) to 10 (worst pain imaginable) using either numbers, pictures, colours or faces (Drendel, Kelly & Ali, 2011). The most commonly used self-report scales in paediatrics' are the visual analogue scale, faces scale and numerical rating scale (von Baeyer, 2006).

Paediatric pain assessment and management is based on the knowledge that pain is a complex biopsychosocial experience, influenced by not only the pathophysiologic mechanisms but also from the thoughts, feelings, and behaviour of individuals (Yazdani & Zeltzer, 2013). Health professionals play a vital role in the assessment and management of pain in children. For health professionals such as doctors, nurses, psychologists and physiotherapists, who provide care to patients experiencing pain on a daily basis, pain management is an integral part of their practice. Therefore, they need to be well educated and have good knowledge about pain to manage it effectively.

(Nuseir, Kassab, & Almomani, 2016). However, many health professionals are not well prepared to care for people with pain (Institute of Medicine, 2011), and in particular, children's pain is poorly managed (Johnston, Gagnon, Peplar, & Bourgault, 2005). It is imperative that health professionals from each discipline have an understanding of all the factors involved in a bio-psychosocial approach when addressing pain in children (Liossi & Howard, 2016). Everyone within the healthcare team is responsible for the management of pain. It is important to consider a multidisciplinary team approach when treating both acute and chronic pain. The IASP describes this approach as multimodal treatment, the combination of several therapeutic interventions with different mechanisms of action used at the same time provided by clinicians from various disciplines (IASP, 2017). Chronic pain, in particular, can have a profound effect on a person's quality of life, including their physical, psychological and social well-being (Konijnenberg et al., 2005). Pain is complex to assess and manage and no single discipline would have the expertise to independently achieve this. It requires persons from multiple disciplines to work together to treat pain effectively (Fashler et al., 2016).

Nurses play an important role in pain management in children as they are the health professionals that spend the most time with the child in hospital (Kusi Amponsah, Kyei-Dompim, Kyei, Afaya, & Ahoto, 2020). A number of studies have been undertaken regarding the knowledge and attitudes of nurses in regards to paediatric pain management. The findings of these studies suggest that nurse's knowledge and attitudes are poor towards paediatric pain management contributing to suboptimal management of paediatric pain (Namnabati, Abazari & Talakoub, 2012; Ekim & Ocakci, 2013; Dongara et al., 2015; Alotaibi, Higgins & Chan, 2019). For example, the findings of a study conducted by Gadallah, Hassan and Shargawy, (2017) in Egypt with 471 undergraduate nursing students revealed that the participants had poor knowledge and

attitudes particularly in areas related to paediatric pain assessment. However, a study conducted in Turkey by Efe, Altun, Cetin and Isler, (2007) involving 198 participants reported that physicians and nurses had knowledge about managing pain in new-borns; although non-pharmacological pain-relieving methods were only used by nurses and not physicians for invasive procedures. Various senior roles have been developed within nursing to improve pain assessment and management. Pain resource nurse programmes have been effective in improving the use of protocols and increasing pain interventions and appropriate analgesia administration. They also help to improve the cooperation and working relationships between doctors and nurses (Crawford, Boller, Jadalla & Cuenca, 2016).

Young people with chronic or persistent pain are at risk of developing mental health disorders such as anxiety and depression (Noel, Groenewald, Beals-Erickson, Gebert, & Palermo, 2016). Paediatric pain psychologists commonly work as part of interdisciplinary pain management teams helping children with acute, chronic and procedure-related pain. They have expertise regarding the psychological, biological and social factors that influence pain in children and teenagers. Paediatric pain psychologists also have the knowledge and skills in psychological assessment and intervention and pain-related behavioural strategies (Law, Palermo & Walco, 2012).

As identified by Law et al. (2012) there are no standard guidelines available for psychologists wishing to specialise in the area of paediatric pain. This has resulted in a wide variation in the quality and content of training and a lack of structure in their training programmes. Although much has been written about psychologists and paediatric chronic pain management (Eccleston, Morley, Williams, Yorke, & Mastroiannopoulou, 2002; Palermo, Eccleston, Lewandowski, Williams, & Morley, 2010; Junghans-Rutelonis et al., 2017), limited research is available relating to the

knowledge, attitudes and barriers amongst psychologists regarding acute and chronic pain in children.

Pain, particularly chronic pain, often can lead to decreased physical activity. This is usually related to fear of pain or of the possibility of further injury (Peng et al., 2008). Hence, the role of the physiotherapist is a crucial component of the interdisciplinary approach to get the patient back to function and improve quality of life. They have an important role in education about the mechanisms of pain and pacing activity. There have been increasing expectations for physiotherapists to integrate the bio- psychosocial approach to pain management into their treatment plans, however, this requires more training (Hansen, O'Sullivan & Moseley, 2016). There are no set regulations or standards for pain education for physiotherapists (Thompson, Milligan, Johnson, & Briggs, 2016) and according to Jones and Hush (2011) there has been a call for an update in pain education in the undergraduate physiotherapy curriculum.

Aim

This integrative review aimed to explore the knowledge, attitudes and barriers amongst health professionals regarding acute and chronic pain management in children.

Significance of the Dissertation

There has been very little research undertaken on paediatric pain management from the perspectives of health professionals as a group (Twycross, Dowden & Stinson, 2014). This integrative review explores research evidence related to the knowledge, attitudes and barriers amongst health professionals regarding acute and chronic pain management in children. This review identifies strengths as well as gaps in the existing literature and

highlights key problems. The findings of this review provide the basis for developing future strategies for effective management of paediatric pain.

The Author's Personal Background and Position in this Dissertation

I am a Paediatric Pain Nurse Specialist at a tertiary paediatric hospital in New Zealand. My current role involves working with children who are experiencing acute and chronic pain. The children experiencing acute pain are typically post-surgical or have trauma or cancer-related pain and are treated as in-patients. While children with chronic pain may have had an initial injury, or disease that could be the underlying cause of their chronic pain, some may suffer from unexplained chronic pain when there has been no previous injury or evidence of damage to the body. These children are treated in an out-patient clinic environment and their care is managed by a multidisciplinary team. This team includes psychologists, physiotherapists, occupational therapist and nursing and medical professionals. The Pain Nurse Specialist role in both specialities involves educating staff and parents about pain assessment and management and providing clinical support. Over recent years I have observed at times that pain assessment and management in the hospital setting is suboptimal. Therefore, I am interested to conduct this integrative review of literature. I am hopeful that the findings of this review will enhance my ability to contribute towards improving paediatric pain management practice in my work setting.

Structure of the Dissertation

This dissertation is presented in four chapters. Chapter One introduces the dissertation topic providing some background context, highlighting the aim and significance of the dissertation as well as the author's personal response for undertaking this dissertation. Chapter Two presents the methodology of the dissertation and Chapter Three presents the findings of the integrative review. Chapter Four is the discussion chapter.

CHAPTER TWO: METHODS

Introduction

The aim of this review was to examine and synthesise evidence from the literature on knowledge, attitudes and barriers amongst health professionals regarding acute and chronic pain management in children. Literature related to the studies that have outlined the current state of paediatric pain management was reviewed and barriers in this area were identified. This chapter will describe the steps undertaken to complete this integrative review. The rationale for using the integrative review method will be discussed. Information on the inclusion/exclusion criteria will be provided and the appraisal tool used for quality evaluation of selected articles will be discussed. The search outcome findings will be presented in tabular form.

Theoretical Position

Over the past twenty years, there has been a significant increase in the development of paediatric pain management models. Overall, these models attempt to understand the biological, social and psychological processes that occur when a child is experiencing pain (Pillai Riddell, Racine, Craig, & Campbell, 2013). While several of these models address acute pain in children, there is a lack of theoretical understanding on effective models that address chronic pain in children. No models have been developed to date that clearly fill the theoretical gap that separates acute and chronic pain in children (Pillai Riddell et al., 2013). This integrative review utilises Craig's Social Communication Model of Pain (2009) as a theoretical guide. This model was developed to better understand the social barriers that limit effective pain control in children. It enables us to understand how the biological, social and psychological features of pain interact. This model relates well to the context of this integrative review because it includes other persons other than the person experiencing pain and the influence that

these people, such as, health professionals and family members can have on the pain experience. The Social Communication Model of Pain (Figure 1) differs from other models because it identifies the caregiver as a central figure in the pain experience while other models identify them only in the social context (Pillai Riddell et al., 2013). Pain is subjective, and the level of pain is whatever the person experiencing it says it is. Kalsay (2017) suggests that in children, due to factors related to age, cognitive development and communication, the participation and cooperation of health professionals and families are vital for appropriate assessment and effective management of pain.

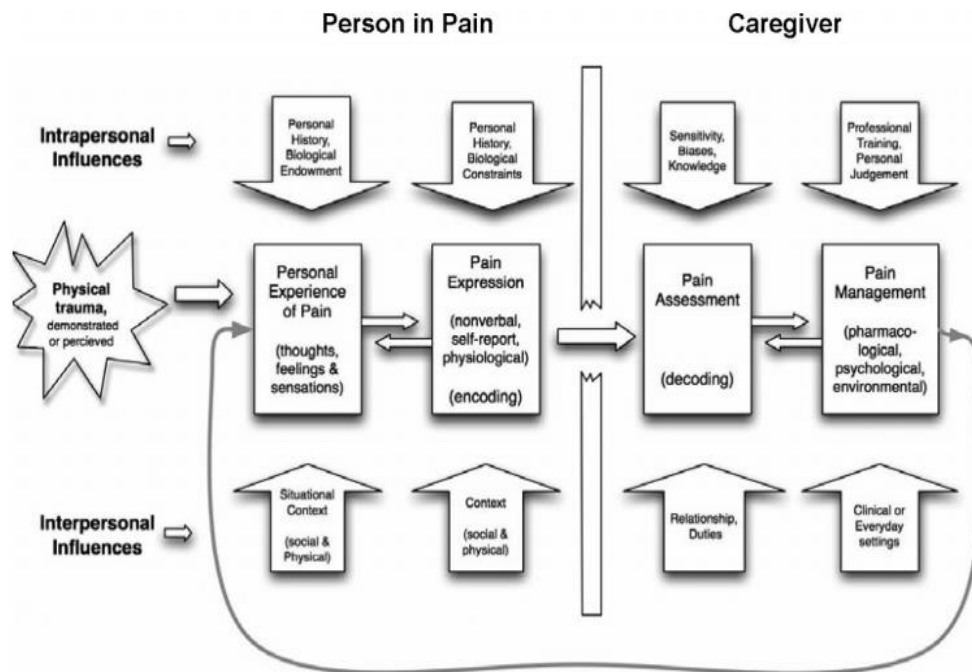


Figure 1. The Social Communication Model of Pain (Craig, 2009).

Design

The integrative review method was used because when reviewing literature, this approach is broad and provides a more in-depth understanding of the identified issue in healthcare (Broome, 1993). It allows the inclusion of diverse sources of data such as experimental and non-experimental research and data from articles that are empirical and theoretical which can help to further improve the understanding of the issue being discussed (Whittemore & Knafl, 2005). The qualitative studies selected provide an understanding of the shared experiences of the health professionals when working with children in pain, while the quantitative studies complement to generalisability of the findings of the selected studies. This review was guided by Whittemore and Knafl's (2005) five-stage framework. The five stages of this method are identification of problems, searching the literature, evaluating data, analysing the collected data and finally presenting the findings.

Problem Identification

In recent years there has been significant development in the research of paediatric pain that has prompted improved strategies to evaluate, treat and better understand pain in paediatric population. However, despite these advances, pain in children continues to be assessed and managed inadequately (Ramira, Instone & Clark, 2016; Stevens et al., 2014). Health professionals' lack of knowledge and understanding and negative attitudes relating to paediatric pain management can be a barrier to appropriate treatment of pain (Mathews, 2011). Inadequately treated pain in this population can lead to long term physical and psychological effects. It is imperative that health professionals have good knowledge and understanding of the importance of quick and effective treatment of paediatric pain (Wong, Lau, Palozzi, & Campbell, 2012).

Literature Search

A comprehensive online database search of Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, Scopus, Cochrane, PsycINFO and Google Scholar was performed. Other relevant articles were sourced by manual searching and searching through the reference lists of relevant articles to find further literature related to the topic. The search terms used were pain management OR pain relief OR pain control OR pain assessment OR paediatric pain management OR paediatric pain assessment OR pain treatment AND acute pain OR chronic pain OR persistent pain OR complex pain AND healthcare professionals OR healthcare workers OR healthcare providers OR health professionals AND child* OR paediatric OR pediatric AND knowledge OR education OR understanding AND attitudes OR beliefs OR perceptions OR perspective OR opinions AND barriers.

Inclusion and Exclusion Criteria

The literature search was limited to articles that were published in English, peer-reviewed and published between January 2009 and August 2019. The 10 year time-frame was chosen to reflect the current evidence on the topic. Also in the past decade, there have been huge advances in the practice of assessing and managing pain in children (Kahsay, 2017). One of these developments was the use of paediatric specific pain assessment tools and knowledge of new pain relieving medications (Verghese & Hannallah, 2010). These were well represented in the review period time frame. Articles that focused on health professionals as a group, paediatric health professionals only and on acute and chronic non-malignant pain in children were also included.

The exclusion criteria were articles that focused on individual healthcare professions and articles related to pain in palliative care settings. Palliative care pain related articles were excluded because of the complexity of managing pain in this area. Pain

management, assessment and treatment plans in children with illnesses that are life-limiting must be more frequent and flexible (Friedrichsdorf & Kang, 2007). These children are managed by palliative care teams who are experts in end of life pain and symptom management. Furthermore, some pain medications are also used for managing other symptoms in palliative care such as opioids for shortness of breath (Crozier & Hancock, 2012).

Search Outcome

During the initial database search, 3362 studies were found. Duplicate studies were removed and 2911 were filtered out using the inclusion/exclusion criteria discussed earlier. The remaining 451 papers were screened by reviewing the title and abstract which resulted in a further 436 being excluded. These articles were excluded for several reasons: (1) They were related to adult pain only or pain related to both children and adults; (2) Articles that only focused on acute pain and excluded chronic pain; and (3) Articles that only focused on cancer related pain. Fifteen full-text articles were assessed for eligibility. This assessment resulted in six further studies being excluded and finally, nine relevant studies were included in this review. Five of these were quantitative, three were qualitative and one was a mixed-methods study. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flowchart (Moher, Liberati, Tetzlaff & Altman, 2009) was used to explain the process of literature selection (Figure 2).

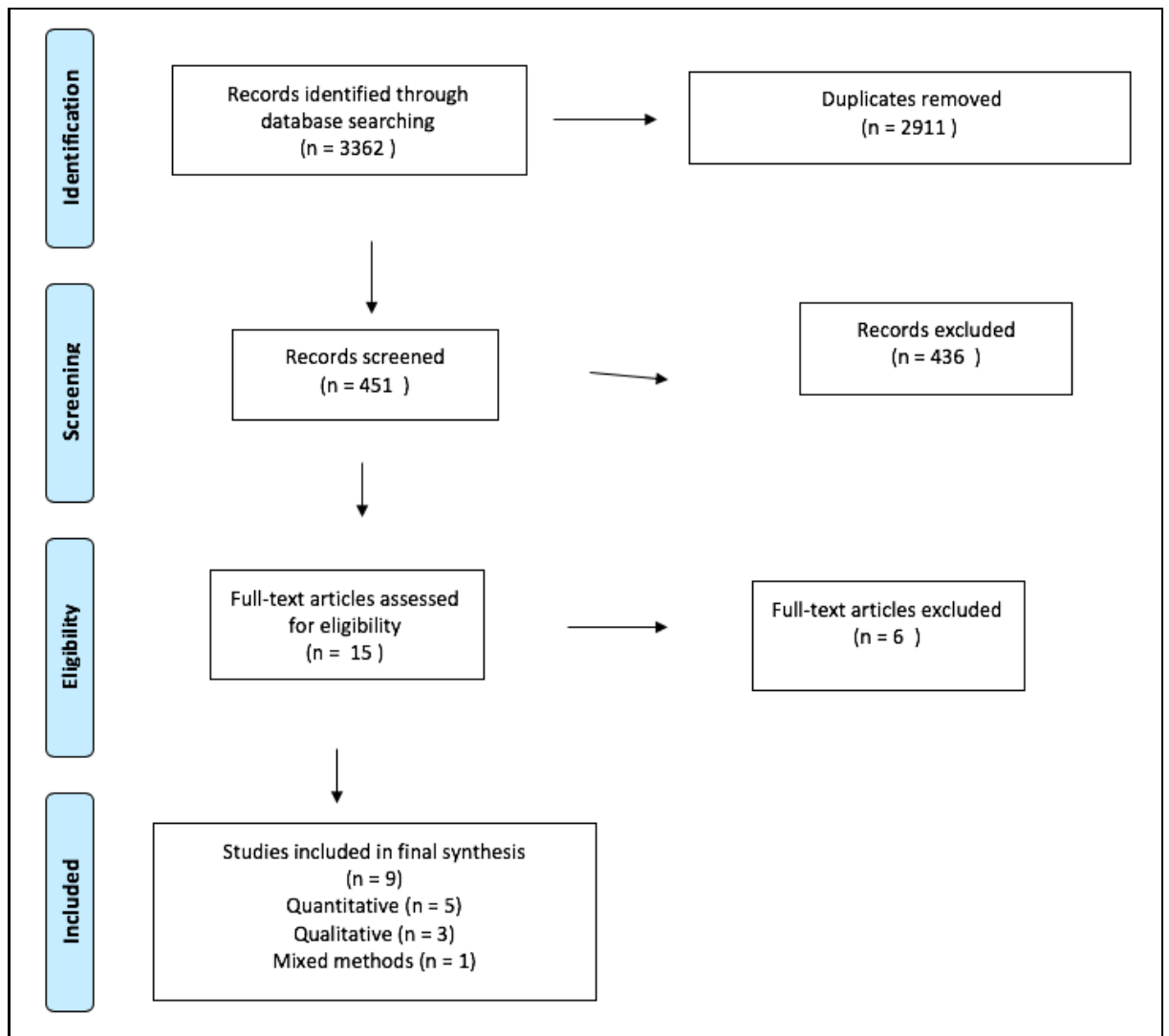


Figure 2. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart (Moher et al., 2009)

Quality Appraisal

As discussed earlier the Integrative review method was used because it allows the inclusion of diverse sources of data such as experimental and non-experimental research (Whittemore & Knafl, 2005). However, due to the diversity of such study designs appraising the quality of each individual study and ensuring they are trustworthy, reliable and valid can be challenging (Hong, Gonzalez-Reyes & Pluye, 2018). The Mixed Methods Appraisal Tool (MMAT) version 18 was utilised in this review because it recognises the distinct characteristics that are specific to each research methodology i.e., qualitative, quantitative and mixed methods (Hong et al., 2019). The MMAT specifically provides requirements for evaluating mixed-method approach research as opposed to other methods. Although critical appraisal techniques for quantitative and qualitative analysis are more readily available, there has been no consensus on consistency standards for mixed research methods (Pluye et al., 2011). Each included study was independently critically appraised using the MMAT (Table 1, Table 2 & Table 3). The nine included articles satisfied most of the criteria for MMAT. The quantitative and mixed methods studies had some criteria that were unclear however, it was still deemed appropriate to include all studies in the review. The findings of these studies were considered with these areas of weakness taken into account.

Data Analysis

When the final nine papers that were to be included in this review were determined they were all read in full several times. Data were reduced by classifying them into groups based on shared characteristics, for example, research design methodology, sample setting and sample characteristics (Whittemore & Knafl, 2005). The extracted data were condensed into a brief summary format. From these data, clear links were established between the findings and the research objective and themes were identified. The articles

were tabulated according to author, sample size/participant information; study aim, methodology, key findings and limitations. The studies were compared to each other and themes were identified.

Table 1*Qualitative studies MMAT. Appraisal of included articles*

Qualitative articles (n=3) Y= yes N=no Ct= Can't tell	S1. Are there clear research questions?	S2. Do the collected data allow to address the research questions?	1.1 Is the qualitative approach appropriate to answer the research question?	1.2 Are the qualitative data collection methods adequate to address the research question?	1.3 Are the findings adequately derived from the data?	1.4 Is the interpretation of results sufficiently substantiated by data?	1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation?
Forgeron et al., 2009, Thailand	✓	✓	✓ Qualitative description	✓ Field observations & semi-structured focused groups	✓ Thematic analysis	✓	✓ Clearly linked
Pillai Riddell et al., 2009, Canada	✓	✓	✓ Qualitative description This approach was appropriate to explore nuances related to chronic pain in infants	✓ Focused groups and semi-structured interviews	✓ Qualitative descriptive technique used	✓	✓ Clearly linked
Carter et al., 2016, England	✓	✓	✓ Qualitative description	✓ Semi-structured interviews	✓ Thematic analysis	✓	✓ Clearly linked

Table 2*Quantitative studies MMAT. Appraisal of included articles*

Quantitative descriptive (n=5) ✓ = yes X=no Ct= Can't tell	S1. Are there clear research questions?	S2. Do the collected data allow to address the research questions?	4.1. Is the sampling strategy relevant to address the research question?	4.2. Is the sample representative of the target population?	4.3. Are the measurements appropriate?	4.4. Is the risk of nonresponse bias low?	4.5. Is the statistical analysis appropriate to answer the research question?	Comments
de Freitas et al., 2014,	✓	✓	✓	✓	✓ Used own tool. Pre-test performed which resulted in some changes	✓ 67% response rate	✓ Descriptive analysis. Central tendency and simple dispersion. Chi-square test. SPSS V. 18.0	Cross-sectional
Van Dijk et al., 2012	✓	✓	✓ Convenience-Survey distributed online to specific groups	✓	✓	Ct Response rate undetermined	✓ Mann-Whitney tests Chi-square or fishers exact tests applied	
Subhashini, Vatsa & Lodha, 2009	✓	✓	✓ Convenience	✓	Ct	✓ Response rate 89.5%	Ct Statistical analysis tool not clearly stated	Prospective descriptive

Bawa et al., 2015	✓	✓	✓ Convenience	✓	X Own questionnaire's developed and used. Not pretested? reliable or valid	✓ 100% response rate	Ct Statistical analysis tool not clearly stated	The range of questions differed for the 2 groups
Linhares et al., 2014	✓	✓	✓ Convenience	✓	✓	✓ 83.6% response rate	The responses were categorised based on the quantitative- interpretive method of Biasoli-Alves to analyse thematic content. Descriptive statistical analysis was performed	

Table 3*Mixed- method study. Appraisal of included article*

Mixed methods (n=1) ✓ = yes X =no Ct= Can't tell	S1. Are there clear research questions?	S2. Do the collected data allow to address the research questions?	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?	5.2. Are the different components of the study effectively integrated to answer the research question?	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?
Beckett et al., 2016	✓	✓	✓	✓	✓	X	✓

CHAPTER THREE: RESULTS

Introduction

This dissertation aims to gain an understanding of the knowledge, attitudes and barriers amongst health professionals regarding paediatric pain management. This chapter presents the findings of nine relevant works of literature that are reviewed for this dissertation. The first section of the chapter provides an overview of the characteristics of the reviewed literature. The second section presents the findings under the common themes that emerged from the integrative review of the literature.

Study Characteristics

Of the nine articles included in this integrative review, the majority utilised quantitative (n=5) study design, three utilised qualitative (n=3) design and one utilised a mixed-method design (n=1). The quantitative studies utilised either surveys (Van Dijk et al., 2012; Subhashini, Vatsa & Lodha, 2009) or questionnaires (Linhares et al., 2014; de Freitas et al., 2014 & Bawa et al., 2015) to collect data. Of the three qualitative studies, one used semi-structured focus group interviews and field observation (Forgeron et al., 2009), one used focus groups and semi-structured interviews (Pillai Riddell et al., 2009) and another utilised semi-structured interviews (Carter et al., 2016) to gather data. The mixed-method study conducted by Beckett et al. (2016) used semi-structured interviews and performed a prospective snapshot of referrals to the pain service over two weeks. The studies were conducted in various countries including two in India (Subhashini, Vatsa & Lodha, 2009; Bawa et al., 2015) two in Brazil (Linhares et al., 2014), one in Thailand (Forgeron et al., 2009), two in the United Kingdom (Carter et al., 2016; Beckett et al., 2016) and one in Canada (Pillai Riddell et al., 2009). The study conducted by Van Dijk et al. (2012) had 65 respondents from 25 countries including

North America (n=37), Europe (n=10), Africa (n=15) and Asia (n=3). Table 4 provides a summary of the articles that are included in this integrative review.

Table 4

A summary of the Articles included in this Integrative Review

Author(s)	Sample size/Participant information	Study Aim	Methodology/ Methods	Key findings	Limitations
Forgeron et al., 2009 Thailand	n= 65 Physicians (21) Pharmacist (1) Nurses (43) From 13 hospitals	To capture the experiences of health professionals in providing pain management to hospitalised children in Thailand	Qualitative Semi-structured focus groups and field observations	Issues regarding recognising the child's pain and communicating the child's pain to the appropriate persons No pain assessment tools utilised Myths and misconception regarding paediatric pain evident Fear/ reluctance to use opioids for pain management	Focus groups sizes were larger than desired-may have impacted on outcome.
Pillai Riddell et al., 2009 Canada	n=45 Nurses (26) Neonatologists (7) Respiratory therapists (7) Pharmacists (2) Occupational therapist (1) Physiotherapist (1) Nutritional scientists (1) 77% female Mostly (85%) 36-55yrs	To explore expert opinions on definitional and assessment parameters of chronic pain in infants	Qualitative Semi-structured Interviews-group and individual	Clear belief that infants experience chronic pain However differing opinions of by health professionals regarding the term "chronic pain" and what the key constructs should be. A definition for chronic pain in infants needs to be agreed upon.	

Subhashini, Vatsa & Lodha, 2009 India	n= 77 89.5% response rate Nurses (47) Paediatric residents (30)	To assess the knowledge, attitude and practices of HCP regarding pain in children	Quantitative Prospective descriptive survey	Knowledge and practice of health professionals needs improvement in the management of paediatric pain Pain assessment tools not utilised Myths and misconceptions regarding pain management in children evident	No actual practice was observed in this study. It relied on self-report from the participants
Van Dijk et al., 2012 North America (n=37) Europe (n=10) Africa (n=15) Asia (n=3)	n=65 From 25 countries Respondents included : Physicians (40) Nurses (21) Psychologists (2) Pharmacist (1) Social worker (1) Male (35.4%) Female (64.6%)	To assess how health professionals in developed and developing countries rate pain intensity and to list the treatment modalities in their setting	Quantitative Survey	In developing countries the management of paediatric pain is less established than in developed countries. No standardised pain management guidelines available Lack of training evident Fear/ reluctance to use opioids for pain management	Small sample size. Online survey- may not have been accessible to all potential respondents.
Linhares et al ., 2014 Brazil	n=92 Doctors (45) Nurses (18) Psychologists (16) Physiotherapists (8) Occupational Therapists (5)	To characterize the opinions of health professionals regarding strategies for the assessment and management of pain in hospitalized children.	Quantitative Questionnaire	Reported lack of training for pain assessment and management and 96% reported that educational training was necessary. Acknowledged that the implementation of standardised guidelines and protocols for pain assessment services was necessary.	Results based on self-report and participants perceptions, no direct observations made. Responses were analysed together not separated to each profession type.

de Freitas et al., 2014 Brazil	n= 122 67% response rate Nurses (29) Physicians (23) Pharmacists (2) Physiotherapist (1) Nursing technicians (62) Nursing assistants (5) 91% female 23-63yrs	To evaluate the degree of knowledge regarding managing paediatric pain and opioids by health professionals	Quantitative Questionnaire	Difficulties exist in the identification, assessment and measurement of pain. Barriers are evident including concern regarding the use of opioids and lack of prescribed analgesia Lack of training evident Limited use of pain assessment tools Myths and misconceptions evident	The main focus of the study was on assessment and knowledge of opioid analgesics- other analgesics are important in pain management. Study took place in 3 units of 1 hospital only
Bawa et al., 2015 India	n= 65 Doctors 30 Nurses 35	To identify the barriers to paediatric pain management in children undergoing surgery	Quantitative Survey- informal questionnaire	Lack of knowledge regarding pain management in children Lack of formal training Lack of standard protocols in this setting Myths and misconceptions evident Fear/ reluctance to use opioids for pain management	One setting One speciality area (surgical) The questionnaires were not the same for both groups
Beckett et al., 2016 United Kingdom	n= 7 Doctors (3) Nurses (4)	To assess the current effectiveness and future sustainability of an acute pain service and pain management in children	Mixed methods Semi-structured interviews and a prospective snapshot of referrals to the pain service over 14 days.	Acute pain service input is important in maintaining standards however they may be contributing to the de-skilling of junior staff. Lack of consideration for use of pain assessment tools	Small sample size Convenience sampling –This may not represent the population

Carter et al., 2016 England	n= 19 Nursing staff n=8 Allied health n=5 Medical professionals n=6	To explore how health professionals develop and acquire knowledge and skills to assess and manage pain in children with cognitive impairment.	Qualitative Semi-structured Interviews purposive and snowball sampling	Uncertainty amongst participants regarding pain management in children Deficits in their skills and knowledge Parental input vital yet challenging at times Pain assessment tools not utilised	Single setting Small sample Sampling methods
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Findings of the Integrative Review

Taking into consideration the purpose of individual study, the methods used and the findings, the data were analysed using a thematic approach and common meanings and issues were identified. Overall, six common themes emerged across all nine studies.

These themes are presented in Table 5.

Table 5

Common Themes Emerged from the Integrated Review

Themes
<ul style="list-style-type: none"> • Lack of training and education regarding pain management • Under-utilisation of pain assessment tools • Fear of using opioids • Myths and misconceptions • Parental influence in children's pain management • Non-pharmacological treatment methods

Lack of Training and Education regarding Pain Management

One of the known barriers to achieving satisfactory pain relief is the lack of knowledge amongst staff regarding pain assessment and management (Pogatzki-Zahn, Kutschar, Nestler, & Osterbrink, 2015). Lack of training, knowledge and confidence of health professionals regarding paediatric pain management was evident in eight out of nine articles included in this integrative review (Bawa et al., 2015; de Freitas et al., 2014; Forgeron et al., 2009; Linhares et al., 2014; Beckett et al., 2016; Carter et al., 2016; Van Dijk et al., 2012 & Subhashini, Vatsa & Lodha, 2009). Although the above issues were

not reported by the participants of the study by Pillai Riddell et al. (2009), lack of clarity around describing chronic pain in infants was in itself identified as a barrier to optimal pain management.

Lack of formal training in paediatric pain management was evident in the study by Bawa et al. (2015) with only 3.3% of the doctors and 2.8% of the nurses participated in the study receiving structured training in this area. This finding was supported by de Freitas et al. (2014) with over 50% of their participants having received no training in pain management during their education. Additionally, over 50% of this study participants had not been offered pain management training by organisations they were working in the past year.

Under-utilisation of Pain Assessment Tools

Accurate assessment of paediatric pain is required to guide pain management interventions. Over recent years, significant attention has been paid to the development of paediatric pain assessment tools to measure pain in children (Cohen et al., 2008). Pain behaviours, and how these behaviours are interpreted by health professionals, are more commonly used as indicators for paediatric pain than reliable and validated pain assessment tools and self-report (Forgeron et al., 2009; de Freitas et al., 2014; Subhashini, Vatsa & Lodha, 2009). This approach, however, may be inconsistent and affected by health professionals' views and beliefs regarding pain in children (Ely et al., 2012).

This review identified that pain assessment tools were never used by some study participants despite their knowledge that the tools existed in their work setting (Subhashini, Vatsa & Lodha, 2009; Carter et al., 2016 & Forgeron et al., 2009). The rationale that the participants gave for not using the tools in the study by Forgeron et al. (2009) were, that there were too many tools to select from, lack of trust in the child's ability to self-report pain and time constraint. Similarly, Beckett et al. (2016) stated that

the participants in their study did not consider the use of pain assessment tools in their practice. Their focus was more on pain management as an expert skill and getting the acute pain service involved. However, such practice is not ideal going forward and as Beckett et al. (2016) state, it supports the concern that relying on pain specialist team could result in health professionals becoming de-skilled in pain management.

de Freitas et al. (2014) and Linhares et al. (2014) also stated that pain assessment tools were used to support pain assessment by only 8% and 29% of participants of their study respectively. Moreover, nearly half (45.4%) of the health professionals (n=77) participated in the study by Subhashini, Vatsa & Lodha, (2009) did not mention the use of any pain assessment tool in their practice. Importantly, none of the participants in this study reported routine use of pain assessment tools in paediatric practice, and only 9% of participants believed they were ideally intended for use in adults.

Myths and Misconceptions regarding Paediatric Pain

Personal beliefs and misconceptions are known factors that can impact the management of pain (Twycross, 2014). It was clear from this review that there was some misunderstanding among the health professional regarding paediatric pain management. These myths include discrepancies about how much children feel pain compared to adults or if they perhaps exaggerate their pain. The participants (n=122) in the study by de Freitas et al. (2014) comprised of nurses, doctors, pharmacists nursing technicians, nursing assistants and a physiotherapist. More than one-fourth of these participants (26.5%) supported the notion that children less than two years old are less sensitive to pain; while only few (8.6%) of the nurses participated in the study by Bawa et al. (2015) believed that, compared to adults, children and neonates experience less pain. The doctors (n=30) who participated in the Bawa et al. (2015) study were not asked about children versus adult pain differences. In contrast, the study by Subhashini, Vatsa and

Lodha, (2009) revealed most of the participants perceived that maximum pain was felt by new-born babies. Misconception was also noted with the belief that children may pretend or exaggerate their pain experience (Forgeron et al., 2009; Subhashini et al., 2009).

Fear of Using Opioids

The fear of using opioids by health professionals is common. These fears are mostly related to concerns about the side effects of these drugs and their potential for addiction (Charalambous, Zorpas, Cloconi, & Kading, 2019). Four of the studies included in this review discussed the reluctance and fear of health professionals to use opioids in children (Forgeron et al., 2009; de Freitas et al., 2014; Bawa et al., 2015 & Van Dijk et al., 2012). This fear was perceived as a barrier to opioids use by 20% of the participants in the study by de Freitas et al. (2014). The majority of the participants (81.9%) in this study also identified a lack of knowledge and confusion regarding symptoms of opioid withdrawal versus symptoms of opioid tolerance, which may result in under-use of opioids. Importantly, Bawa et al. (2015) reported that sixty per cent of the doctors that participated in their study had concerns about their patients becoming addicted to opioids and as a result only 30% of them used full doses of opioids. Furthermore, only 17% of the nurses participated in this study believed that opioids were safe to be used in paediatrics.

The notion of addiction was supported by the finding of the study by Forgeron et al. (2009), as the participants in their study placed excessive emphasis on the side effects of opioid use particularly those related to risk of addiction or respiratory depression. There was also a belief among some of the participants in this study that opioids were more harmful than the actual pain. In addition, Van Dijk et al. (2012) reported that in some developing countries access to the use of opioids was either limited (used for postoperative patients only) or had strict laws around their use.

Parental Influence in Children's Pain Management

Children's pain experiences can be improved by having a parent present and involved in their care. Parents' involvement may also help reduce their own anxieties and lead to increased satisfaction with the care of their child (Vasey, Smith, Kirshbaum, & Chirema, 2016). Five out of nine studies included in this integrative review suggested mixed views about parental presence during children's pain assessment (Carter et al., 2016; Forgeron et al., 2009; Beckett et al., 2016; de Freitas et al., 2014 & Subhashini, Vatsa & Lodha, 2009). The majority (86%) of the participants in the study by Subhashini, Vatsa & Lodha, (2009) mentioned that having a parent present for a pain assessment made the pain assessment process easier. This positive view regarding the parents' involvement in children's pain management was further supported by the findings of Carter et al. (2016) and Forgeron et al. (2009) particularly when managing pain in children with cognitive impairment. It was stated, however, that while the input from the parents of the children can be invaluable and the health professionals viewed them as experts in the care of their children, at times parents can become challenging (Carter et al., 2016). Parents can challenge the decisions of health professionals and give the impression that they know everything; which can be a barrier for health professionals in their clinical decision making to manage children's pain effectively (Carter et al., 2016).

However, the challenging behaviour of parents was not seen as an issue by the participants of the study by Forgeron et al. (2009) that was conducted in Thailand. The participants believed that such parental behaviour was related to culture. In Thailand, respect is shown to those in authority and unless parents are told to inform health professionals when their child is in pain, then they will not. According to Beckett et al. (2016), the parenting style and coping mechanisms of the family could impact on how the child responded to and experienced pain. The majority of the participants

(76%) in a study conducted by Subhashini, Vatsa & Lodha (2009) were willing to have a parent present when small invasive procedures were being performed on their children.

Pharmacological and Non-pharmacological Pain Management Methods

Pain is influenced by a variety of physical and psychosocial factors, and so, patients' responses to pain and pain medications can vary. It is therefore, important to have a range of options available, including pharmacological and non-pharmacological options, to manage pain effectively (Mwanza, Gwisai & Munemo, 2019). The use of pharmacological and non-pharmacological methods for paediatric pain management was discussed in five of the nine studies included in this review (Van Dijk et al., 2012; de Freitas et al., 2014; Linhares et al., 2014; Beckett et al., 2016 & Subhashini, Vatsa & Lodha, 2009). However, non-pharmacological methods were discussed by just one of the seven health professional participants in the qualitative component of the mixed-method study that was conducted in England (Beckett et al., 2016). This study compared pain management practices and assessed the effect of the acute pain service (APS) between two groups. All of the children (n=30) received pharmacological interventions. The use of simple analgesia was below the required maximum dosing in the children (n=15) that had APS input compared to the group with no APS input (n=15). The group with no APS input utilised a range of simple and strong oral analgesics to manage the pain effectively. In contrast, all of the participants (n=122) in the de Freitas et al. (2015) study reported using non-pharmacological pain management practices including cuddles and hot water bottles. This approach of managing pain with non-pharmacological methods was supported by 62.3% of the participants in the study by Subhashini, Vatsa & Lodha (2009). They believed that non-pharmacological methods were better than pharmacological and that distraction was the most common non-pharmacological approach used. In contrast, majority (78%) of the respondents in

the study by Linhares et al. (2014) mentioned that they used pharmacological methods to relieve pain. They also stated that their knowledge regarding pharmacological management was limited due to lack of training, particularly around medication options to treat pain, and lack of medication-related protocols for paediatric pain assessment and management. Only 26% of the respondents in this study described the use of non-pharmacological approaches to comfort the child and 18% of them did not consider using non-pharmacological methods at all. Their reasoning for limited use of the non-pharmacological approach was due to lack of training and limited communication between healthcare teams (Linhares et al., 2014).

Van Dijk et al. (2012) revealed in their study that both pharmacological and non-pharmacological approaches to paediatric pain management need improvement in developing countries. Forty seven respondents from developed countries and 18 from developing countries took part in the survey for this study. The study revealed that just 50% of the developing countries' respondents used weak opioids to manage pain compared to 84.8% of developed countries and five of the developing countries did not use strong opioids at all. While most respondents (91.5%) from developed countries utilised family involvement as a non-pharmacological intervention; just half (50%) of developing countries' respondents did the same.

Summary

In this chapter the findings of the nine relevant articles included in this integrative review have been presented. The findings highlighted that paediatric pain assessment and management is suboptimal and the knowledge and attitudes of health professionals remains unsatisfactory. Barriers to effective pain assessment and management in children still exist. There is a lack of education related to paediatric pain management for health professionals and that several myths regarding paediatric pain exist as barriers

to effective pain management. The common findings of this integrative review will be discussed further in the next chapter.

CHAPTER FOUR: DISCUSSION

Introduction

This integrative review explored and analysed literature on the knowledge, attitudes and barriers amongst health professionals regarding acute and chronic pain management in children. Nine studies were considered relevant and so, they were included in this review. Based on the findings of these studies, six common themes were identified. These themes included, lack of training and education regarding pain management, under-utilisation of pain assessment tools, myths and misconceptions regarding paediatric pain management, fear of using opioids, parental influence in children's pain management and pharmacological and non-pharmacological pain management approaches. The aim of this chapter is to critically discuss the common findings of this integrative review relating with relevant literature; and to provide recommendations for policy and practices for effective management of children's pain.

Critical Discussion of the Key Findings

Education on Pain Management

One of the main findings that emerged from this integrative review is the lack of pain education for health professionals. Pain education is a key element to pain management practice and educating health professionals is vital to enhance effective practice (Briggs, 2012). However, several studies have revealed that pain education at undergraduate level is inadequate for health professionals (Watt-Watson et al., 2009; Briggs, Carr & Whittaker, 2011; Leegaard, Valeberg & Haugstad, 2014; Miró et al., 2019). These studies from Canada, the United Kingdom, Norway and Spain respectively, all

concluded that inadequate hours were allocated for health professionals for pain related course content. These findings were consistent with the findings of the European two phase study (Briggs et al., 2015), which reviewed the pain education content for undergraduate health professionals at 242 medical schools. Furthermore, it was noted that 69 per cent of the facilities had no dedicated pain teaching and that a median of only 12 hours of medical degree training time was devoted to pain teaching content in those facilities where pain teaching was a mandatory component of the curriculum.

Recently a study was conducted in Australia and New Zealand (Shipton, Bate, Garrick, Steketee, & Visser, 2018) to explore the delivery of pain medicine related education at medical schools. Nineteen medical schools participated revealing similar results in regards to inadequate pain related course content. A median of 20 hours was allocated to pain medicine teaching. Importantly, paediatric pain was neglected in the curricula. Limited pain related curricula content is not just an issue in medical schools but also in other disciplines. For example, a study conducted in Spain (Miró et al., 2019) examined pain content across all health related undergraduate degrees. The results indicated that the nursing degree contained 230 hours (9.6%) of pain related content while psychology, pharmacy and nutrition all showed less than 5 hours (0.1%) for the same length degree. In regards to specific teaching content, pain in infants, children and adolescents was the least addressed area across all disciplines.

Literature has indicated that it is difficult to know how much pain education is enough for health professionals. The range of skills and knowledge that the health professional needs to be competent is broad and diverse. Therefore, to support the theoretical and practical aspects of the subject, pain education requires the inclusion of a variety of teaching approaches to support the teaching process including the evaluation of knowledge acquired (Thompson, Johnson, Milligan & Briggs, 2018). Some initiatives were introduced to address the lack of pain knowledge in practice. The International

Association for the Study of Pain (IASP) recognised that there was a gap between knowledge and practice regarding pain management amongst health professionals (IASP, 2018). It highlighted insufficient pain education for health professionals contributed to ineffective pain management. The IASP developed an inter-professional pain curriculum aimed at undergraduate or entry level health professionals from varying disciplines (Watt-Watson et al., 2004). The main objectives of this curriculum were to impart the knowledge and skills required to develop the science and management of pain as part of an effective interdisciplinary team. This curriculum was widely utilised and has since been reviewed and updated (IASP, 2018). The IASP also labelled 2018 as a Global Year for Excellence in Pain Education (IASP, 2018). During this time the IASP highlighted pain education and addressed areas of concern to help bridge the knowledge- practice gap.

Furthermore, in America, another initiative called 'ChildKind' was developed in 2010 to reduce paediatric pain globally (Schechter, Finley, Bright, Laycock, & Forgeron, 2010). According to this initiative, five criteria must be met before the institutions can receive the Childkind international certificate of excellence in paediatric pain assessment and management. These institutions must prove that they are committed to pain prevention, assessment and management in children and that they are using protocols that are evidence-based. They also must have on-going pain related education for staff, patients and care-givers; and utilise processes that are developmentally appropriate to assess pain in children. These initiatives indicate that there is greater awareness of the need for better paediatric pain management. However, despite the attempts to improve paediatric pain management practices, it is clear from literature that barriers to effective pain management still exist and pain management practices have not changed.

Use of Pain Assessment Tools

Pain measurement in children is important because these measurements may indicate that pain treatment is required and they are also utilised to evaluate the response of the individual child to pain treatment (Lloyd-Thomas, 1999). As discussed earlier various paediatric pain assessment tools have been developed to help with the pain measurement process (Sroujl, Ratnapalan & Schneeweiss, 2010). The findings of this integrative review indicated that paediatric pain assessment tools are under-utilised (de Freitas et al., 2014; Linhares et al., 2014; Subhashini, Vatsa & Lodha, 2009; Carter et al., 2016; Forgeron et al., 2009). The importance of using pain assessment tools has been well researched. However, the literature indicated that these tools continue to be under-utilised in the paediatric setting, despite having numerous standards and protocols recommending using these tools. Franck and Bruce (2009) conducted a review of the literature to explore the reasons for non-compliance with utilising pain assessment tools in the paediatric setting. The findings of the review suggested that there was insufficient good quality evidence available for the effectiveness of these tools in relation to the outcomes for the patients. Moreover, it was noted that without sufficient evidence for the use of pain assessment tools, clinicians may be resistant to use these tools. Therefore, effective strategies to increase and improve the use of pain assessment tools must be implemented in areas where pain assessment tools are under-utilised. Success in increasing clinicians' utility of pain assessment tools is relative. For example, Aleyadhy, Temsah, Alhaboob, Hasan and Babiker, (2015) introduced new pain assessment tools and guidelines for paediatric pain assessment and management in a teaching hospital in Saudi Arabia. These guidelines were supported by an education and awareness campaign. After just one year the results of a survey conducted by the authors revealed that the health professional participants' (n=28) compliance in utilising

pain tools remained low as more than half of the participants stating that they never used pain assessment tools. Failure of health professionals to utilise the pain assessment tools may not be related to knowledge or practice gaps as is suggested across the literature it may be related to health professionals own motivation or ability to recognise and respond to pain (Franck & Bruce, 2009). When working with patient's having chronic pain, it is vital that the health professional has the ability to guide and coach the patient to self-manage their pain in the community. However; some health professionals are not prepared to guide and coach patients with chronic pain (Institute of Medicine, 2011). Therefore; as suggested by Franck and Bruce (2009), no standardised instruments can address the lack of motivation or ability of health professionals to utilise pain assessment tools.

Issues on Opioid Use

Opiophobia, or the fear of opioids, is a barrier to effective pain management in clinical practice (Bennett & Carr, 2002). Such fear is quite notable among health professionals, which appears to be related to poor knowledge and education regarding the use of opioids for pain relief, resulting in underuse of opioids and inadequate management of pain (Charalambous, Zorpas, Cloconi, & Kading, 2019). The findings of this integrative review highlighted that opiophobia was affected by childhood addiction and opioid use concerns associated with a lack of education for health professionals (Bawa et al., 2015; Forgeron et al., 2009). These concerns were also reported in an Australian study (Dowden, McCarthy and Chalkiadis, 2008) that examined pain management practices and identify barriers to the effective management of pain at a tertiary children's hospital. Concerns amongst some of the 454 staff surveyed were reported regarding the use of opioids particularly related to addiction and side effects while the majority of the participants had little knowledge on the differences between tolerance, addiction and

dependence on opioids. Similarly in Sudan, a questionnaire to assess knowledge, attitudes and practice of trainee paediatric doctors (n=174) regarding paediatric pain was conducted (Alhassan, Ahmed and Bannaga, 2017). Thirty five per cent of the respondents believed that even when opioids were just given for less than 48 hours dependence was highly likely to occur. Most agreed that opioids were either rarely prescribed or under prescribed. Five per cent of participants stated that, despite the presence of illnesses that indicated the use of opioids, they were not prescribed at all during their clinical placement rotation.

Opioids play a vital role in the management of pain in children and adults undergoing surgery (Cravero et al., 2019). As suggested by Friedrichsdorf and Goubert (2020), rather than avoiding opioids in children a multimodal pain management approach (a combination of pharmacological and non-pharmacological measures) should be introduced. According to Friedrichsdorf and Goubert (2020), failure of health professionals to incorporate evidence-based pain management and treatment for children in hospital is deemed to be unacceptable and a poor standard of care.

Myths and Misconceptions regarding Pain Management

The management of pain often depends on the attitudes and beliefs of health professionals and can be negatively impacted by myths and misconceptions (Albertyn, Rode, Millar & Thomas, 2009). Numerous myths and misconceptions regarding paediatric pain management still exist, particularly in less developed countries, which can prevent health professionals from providing effective care for children (Finley, Forgeron & Arnaout, 2008). The findings of this integrative review also highlighted that the myths regarding children's pain management still exists. It was surprising to see that some health professionals thought analgesia should be withheld in a patient with an acute abdomen pain because it may mask the signs and symptoms before the diagnosis

(Bawa et al., 2015). There is no evidence to support this claim (Bailey, Bergeron, Gravel, Bussi eres, & Bensoussan, 2007). Despite lack of evidence, the claim that analgesia may mask symptoms was supported by 33% (10/30) of the residents participating in the study by Bawa et al. (2015) while 36% (11/30) believed this to be the case only some of the time. Similarly, the study by de Freitas et al. (2014) revealed that 47% of their study participants thought that opioids should only be prescribed once a diagnosis has been made. As Forgeron et al. (2009) reported, physicians focused more on finding the cause of the pain rather than on treating the pain.

The evidence across the literature suggests that using opioids before diagnosis does not disturb the clinical picture and in some cases, it may improve the accuracy of the diagnosis (Brewster, Herbert & Hoffman, 2020). This view has now been widely accepted with many studies performed and the findings suggesting that the practice of giving analgesics/opioids is safe and does not mask the symptoms. Green, Bulloch, Kabani, Hancock and Tenenbein, (2005) addressed this myth in a double-blind randomised placebo controlled trial involving 108 children aged between 5-16 years, who presented to the emergency department with acute abdominal pain. The study concluded that while morphine reduced the intensity of the children's pain, it did not appear to hinder the diagnosis of appendicitis. These results are similar to those reported by Bailey et al. (2007) in Canada. They performed a randomised, double-blind, placebo-controlled trial with 90 children aged between 8-18 years, who went to the emergency department with acute abdominal pain. Despite the results from this study revealing that morphine was no more effective in reducing pain than the placebo, it did confirm that using opioids in children with acute abdominal pain does not impact the surgeon's ability to make a clinical decision or diagnosis.

It is disappointing to see from this integrative review that despite the advances that had taken place in the understanding of paediatric pain many myths and misconceptions still

exist (de Freitas et al., 2014; Bawa et al., 2015; Forgeron et al., 2009; Subhashini et al., 2009). To improve pain assessment and treatment in children more emphasis must be put on dispelling these myths at undergraduate level for all health professionals. As Babiker et al. (2014) suggests, a team based healthcare approach is needed to provide essential information to enhance safe and effective care.

Parents' Influence and Role in Pain Management

It is well known that parental distress, parents' emotions and their response to the pain of their child can significantly affect the experience of the child's pain (Sieberg, Williams & Simons, 2011; Palermo, Valrie & Karlson, 2014). The mixed views on parental presence during painful procedures were evident in this integrative review. Some of the study participants supported parental presence because it made the process easier (de Freitas et al., 2014; Forgeron et al., 2009), while others found parental presence both helpful and challenging (Carter et al., 2016). The health professionals participated in the study by Carter et al. (2016) stated that they relied on the knowledge of the parents when assessing and managing pain in children with significant cognitive impairment. The parents' knowledge of their child's needs was seen as vital in some cases. However, when parents challenged the health professionals' decisions, it became unsettling for the health professionals (Carter et al., 2016).

Parental presence and influence during their child's invasive procedures has been researched and well documented in the literature. Matziou, Chrysostomou, Vlahioti and Perdikaris (2013) conducted a study in Greece involving 130 children aged between seven to ten years old to investigate the effect of parental presence during a painful procedure compared to distraction with a toy or no parent present. The study concluded that having a parent present reduced pain and stress and the toy, although helpful, had less effect. The findings resonated with a Turkish randomised controlled study on

children undergoing invasive procedures, where parental absence was associated with high levels of pain (Saglik & Caglar, 2019).

It is important for health professionals to consider the parent's feelings while their child is undergoing a painful procedure because this may have an impact on the success and outcome of the procedure. As Karlsson, Dalheim Englund, Enskär, & Rydström (2014) highlighted, it is important that health professionals inform and support the parent, and so, parents can support their child.

Use of Non-pharmacological Pain Measures

Due to the multidimensional nature of pain with its physical, behavioural and psychological components, and taking into account environmental and sociocultural factors, it is essential that both pharmacological and non-pharmacological measures are used to manage pain in children (Matthews & Malcolm, 2007; Morton, 1997). The use of non-pharmacological pain management measures may reduce the dose of pain medicine required or exclude the use of pharmacological pain management options. Many of the non-pharmacological treatment options are cheap, easy to access and safe to use for every child, so they should be the first option when planning care for patients (Pancekauskaitė & Jankauskaitė, 2018). The findings of this integrative review revealed that there is lack of use of non-pharmacological pain management options in children. There were inconsistencies with the number of study participants utilising a non-pharmacological approach. All of the participants in the study by de Freitas et al. (2014) reported using non pharmacological measures to relieve pain; whereas, just 62.3% and 26% of participants respectively in the studies by Subhashini, Vatsa and Lodha (2009) and Linhares et al. (2014) reported utilising these measures. Several factors were identified as barriers to utilise non-pharmacological pain interventions. They included lack of training and limited communication between healthcare teams (Van Dijk et al.,

2012); time constraints, poor knowledge, increased workloads and the inability of the child to cooperate (He et al., 2010). According to He et al. (2010), an educational intervention improved nurse's knowledge and an increased use of non-pharmacological measures. However; the other barriers remained unchanged and at the post test for the educational intervention more nurses reported that there was a lack of cooperation and support from parents for utilising non-pharmacological measures. These barriers related to utilising non-pharmacological pain interventions were supported by the finding of a study conducted by Pölkki, Laukkala, Vehviläinen, Julkunen and Pietilä, (2003). This study was conducted at a tertiary hospital in Finland to identify enablers and barriers for nurses (n=162) to use of non-pharmacological pain relieving methods in surgical pain in children. However, this study indicated that the insecurities and incompetency of the nurses had a more substantial effect on the surgical pain relief for the children, than work-related factors or the characteristics of the child or the parent.

It would be interesting to see the outcome of the Finnish study if it was repeated on children with chronic pain because in this population there is a strong emphasis on the use of non-pharmacological approaches. Unfortunately for children with chronic pain, non-pharmacological approaches are often introduced too late or when multiple pharmacological measures have been ineffective (Wren et al., 2019). Trying to introduce non-pharmacological options such as cognitive behavioural therapy or mindfulness at this stage often leads to the child feeling 'not believed' by professionals and they are less willing to participate or learn how to utilise these tools (Wren et al., 2019). Consideration should be given to having early input from a multidisciplinary chronic pain team for children with chronic pain. As Fields (2011) suggests, being involved with a group of healthcare professionals from different specialities may provide the patient with the opportunity to undertake various treatment modalities

including pharmacological and non-pharmacological interventions that are specifically tailored to patients' needs.

Strengths and Limitations

This dissertation utilised an integrative review method because when reviewing literature, this approach is broad and provides a more comprehensive understanding of the identified issue in healthcare. Integrative reviews allow for the inclusion of diverse sources of data and have the potential to inform practice and policy initiatives. The integrative review method aims to provide a broad summary of the existing literature (Whittemore & Knaf, 2005). However, the sample size was small as only nine studies found to be appropriate to include in this review. Therefore, the results may not be generalised to the wider population. Only the articles written in English were included in this review. Hence, several non-English articles written by health professionals internationally who specialise in paediatric pain and work alongside children in purpose built pain facilities had to be excluded. Those health professionals' experiences may have been a valuable contribution to this integrative review.

Recommendations and Implications for Clinical Practice

The findings from this integrative review reveal that there is a knowledge-practice gap for health professionals working with children in pain and as a result children's pain continues to be poorly managed and undertreated. This inadequacy in children's pain management may be a result of limited pain content in the curriculum at pre and post graduate level for health professionals. The myths and misconceptions that are associated to pain in the paediatric population may also be contributing factors for under-treatment of children's pain. Many frameworks related to pain assessment and management have been developed in healthcare to guide the practice of implementing

change to achieve better health outcomes. However, most available frameworks are related to the nursing discipline only or for adult patients such as the New Zealand Pain Management Nursing Knowledge and Skills Framework (NZPMKSF). This framework was developed in 2013 to identify the knowledge and skills required by nurses to care for people with acute and chronic pain. This framework can be used to inform curriculum development at undergraduate and post graduate level for nurses (New Zealand Pain Society, 2019). Similarly a conceptual framework for nursing management of pain (Heath & Reid-Finiay, 1998) was developed with the understanding that in order for the nurse to provide effective pain care, they must have adequate knowledge and positive attitudes towards effective pain management. However, this conceptual framework (Heath & Reid-Finiay, 1998) had specific focus on improving nurses' knowledge and attitude regarding pain management. It is evident from this integrative review that health professionals as a group would benefit from the availability of a framework to guide their practice that is specifically aimed at improving acute and chronic pain management in children.

It is essential that health professionals from each discipline understand all the factors involved in the bio-psychosocial approach when managing paediatric pain (Hurley-Wallace, Wood, Franck, Howard, & Lioffi, 2019); although the findings of this integrative review indicating that some doctors believe that it is the nurses role to assess pain and the doctors role to determine its cause (Forgeron et al., 2009). The curriculum guidelines developed by The International Association for the Study of Pain (IASP) could be integrated into a new framework. This may be useful because the (IASP) guidelines include paediatric pain content and are both specific to each discipline and interdisciplinary context. Such framework provides students with an opportunity to understand and appreciate the expertise of other health professionals beyond their own discipline (IASP, 2018). Guidelines are seen as tools that can help to make health care

more efficient and consistent towards closing the gap between science and practice (Woolf et al., 1999). Acceptable protocols and guidelines should be produced and implemented into practice and the effectiveness of current protocols and guidelines should be evaluated. Any changes that are implemented must be supported by all health professionals responsible for assessing and managing pain in children. Continuing participation in pain related education beyond the undergraduate level is vital for health professionals (Devonshire & Nicholas, 2018) in order for them to keep up with most current and effective pain assessment and management methods. Therefore, on-going educational and training opportunities for health professionals involved in the assessment and management of paediatric pain must be supported.

Conclusion

Pain is one of the most common causes for people to seek healthcare and health professionals play a vital role in the assessment and management of pain. Both acute and chronic pain is highly prevalent in children presenting to healthcare facilities. Evidence suggests that pain in children continues to be poorly assessed and managed by health professionals. Ineffectively managed pain in children can prompt issues with persistent pain and psychological well-being into adulthood. This dissertation aimed to explore the knowledge, attitudes and barriers amongst health professionals regarding acute and chronic pain management in children.

The integrative review method guided by Whitemore and Knafl's five-stage framework was utilised and the quality of each individual study was appraised using the Mixed Method Appraisal Tool. Nine articles were identified as being relevant for inclusion in this integrative review. The findings of this review revealed that literature on the knowledge, attitudes and barriers of health professionals as a group regarding acute and chronic pain in children is limited. Health professionals' lack of knowledge and false

beliefs are amongst some of the barriers that prevent children receiving appropriate pain assessment and optimal pain management. Pain education content at undergraduate level for health professionals is minimal or non-existent; and despite the introduction of several initiatives to improve pain education it is often offered too late. Pain assessment tools which have been specifically designed to make the pain assessment process easier are under-utilised. Furthermore, many myths about pain in children still exist that hinder appropriate pain management. There is a fear of using opioids in children amongst health professionals and non-pharmacological measures to relieve pain are also under-utilised. Parental presence in their child's pain assessment and management was seen both as helpful and challenging by health professionals. This integrative review adds to the existing literature showing that paediatric pain assessment and management is suboptimal. It is recommended that a framework is developed to guide multidisciplinary health professionals' practice that is specifically aimed at improving acute and chronic pain management in children. Utilisation of a theoretical principals similar to Craig's Social Communication Model of Pain is recommended in developing a framework that may contribute towards effective, safe and consistent assessment and management of both acute and chronic pain in in children.

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