

EMERGENCY DEPARTMENT NURSES' KNOWLEDGE AND ATTITUDES
REGARDING INFANT PAIN AND PAIN MANAGEMENT AND PERCEPTIONS OF
CERTIFIED CHILD LIFE PRACTITIONERS

by

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LIST OF ABBREVIATIONS

Abbreviation	Description
CCLS	Certified Child Life Specialist
ED	Emergency Department
NKAS	Nurses' Knowledge and Attitudes Survey
RN	Registered Nurse
PNKAS	Pediatric Nurses' Knowledge and Attitudes Survey

ABSTRACT

The present study examines Emergency Department nurses' perceptions of infant pain management and their perceptions of consulting and engaging with certified child life specialists (CCLS). Participants consisted of 29 registered nurses that currently work in pediatric emergency departments. Participants completed an online survey that assessed participants' perceptions of the child life specialist role, use of nonpharmacological pain management, and their knowledge and attitudes regarding pediatric pain and pain management. Results revealed that pediatric nurses' knowledge and attitudes toward pain management in children varied by level of education and amount of experience working in pediatrics. Findings also suggest that most nurses recognize the significant impact that child life specialists have on the psychosocial well-being of patients and families but might not recognize fully how child life interventions can improve the physical well-being of patients. Study implications for practice are discussed.

I. INTRODUCTION

The first years of life are a critical time period (Santrock, 2011). This is a time in which the experience of sustained and recurring pain can have detrimental consequences on an individual's overall development (Williams & Lascelles, 2020). It was once widely believed that children do not feel as much pain as adults and that newborns did not experience pain at all (Kuttner, 2010, p. 52). However, research has shown that early pain experiences can alter the development of the pain system, in addition to altering behavior and cognition later in life (Polkki et al., 2018). While there are numerous studies on pediatric pain in school-age and adolescent patients, the literature regarding pain in infants and neonates is comparatively sparse but reveals that infant pain is undertreated (Alexander & Manno, 2003; Rodkey & Ridell, 2013). O'Neal & Olds (2016) evaluated pediatric pain management across units and found that neonatal intensive care units (NICUs) had the lowest average percentage of patients with pain. This study supports that infants are a unique population at risk for the undertreatment of pain and benefit from having healthcare providers familiar with the appropriate pain assessment scales and effective interventions to support the needs of their developmental age. One factor that might underlie this finding is nurses' comfort and experience caring for infants in pain. For example, Thomas and colleagues found a positive correlation between years of nursing experience and nurse comfort with providing nonpharmacological analgesia and suggest that this may be due to nonpharmacologic methods being learned "on the job" (2015). These relations have not been examined in the Emergency Department (ED) context. Given findings that when children under the age of 2, a sample of the population vulnerable to *oligoanalgesia*, presented in the pediatric ED they received disproportionately less analgesia than school-age children (Alexander & Manno, 2003; Thomas et al., 2015), it might be especially important to examine the perceptions

of nurses in emergency departments about infant pain management strategies. Thus, the present study examines ED nurses' perceptions of infant pain and pain management and their perceptions of consulting and engaging with certified child life specialists (CCLS). CCLS are professionals that aim to promote positive outcomes for children and families and can help reduce stress and anxiety associated with hospitalization (Thompson, 2018). Accordingly, ED nurses' perceptions of CCLS might be an especially important factor underlying infants' comfort level.

Prevalence of Infants seeking care in Emergency Departments

When looking at the U.S. population, over a quarter of the population is under the age of 5 years old, and those under the age of 2 have the highest rate of ED visits when compared to other age groups (McDermott et al., 2018). The environment of an ED can be especially stressful for children, which makes a traumatic or emotionally charged experience in the ED early on in life very impactful on the expectations a child makes for future healthcare experiences (Alcock et al., 1984; Cristal et al., 2018). Children under the age of 2 years have long been recognized as receiving disproportionately fewer pain management methods when compared to school-age children (Alexander & Manno, 2003). Because these individuals must rely on adults to interpret their pain because of the lack of language present at this age, they are vulnerable to receiving insufficient pain management. Inadequate pain management in the setting of the pediatric ED is a well-documented issue (Bandstra et al., 2008; Herd et al., 2009; Taylor et al., 2013; Wilson & Pendleton, 1989) and there is a risk of long delays to analgesia, most notably occurring with patients under the age of 3 years old (Yackey & Rominger, 2018).

To understand factors that might relate to these challenges, it is important to consider the processes of care in the ED setting. In the ED setting, pain assessment begins at triage where the

first clinician to meet with a child and family is a registered nurse (RN) who will accompany them throughout their care (Ramira et al., 2016). Nurses play the primary role in pain management practices, and when evidence-based protocols or educational interventions are in place it has been observed that there is reduction in time to analgesia, increased provision of analgesia, and increased parent satisfaction (Brent et al., 2009; Iyer et al., 2011; Newstead et al., 2013; Taylor et al., 2013). However, this was not the case for groups where children were under 4 years old (Somers et al., 2001).

Long Term Effects of Unresolved Pain

Pain is an unpleasant sensory experience associated with actual or potential tissue damage that always has an emotional impact (Kuttner, 2010; Olmstead et al., 2010). When a child is in pain, the body releases stress hormones that trigger several systemic changes including increased heart rate, elevated blood pressure, weakened immune function, and delayed healing (Olmstead et al., 2010; Riddell et al., 2011). Prolonged pain causes changes in the nervous system, along with increased sensitivity and irritability (Kuttner, 2010; Olmstead et al., 2010).

When it comes to needles, unless a therapeutic plan to prevent fear has been implemented, children will build up greater fear of injections and quickly learn to resist later procedures (Kuttner, 2010). Unsuccessful procedures consequently result in increased procedural time which can produce significant distress for children (Rocha et al., 2003; Tsao et al., 2004; Kennedy et al., 2008; Olmstead et al., 2010). Past research has documented the development of maladaptive responses to future painful procedures and this includes: higher pain levels accompanied by fear and non-compliance during interventions (Cohen et al., 2001; Rocha et al., 2003; Kennedy et al., 2008; Olmstead et al., 2010), conditioned anxiety in response to medical procedures (Rocha et al., 2003; Tsao et al., 2004; Olmstead et al., 2010), diminished analgesic

effects with following procedures (von Baeyer et al., 2004; Olmstead et al., 2010), predisposition to persistent or chronic pain (Kuttner, 2010; Olmstead et al., 2010), and negative memories of painful events leading to significant anticipatory stress and anxiety for future procedures (Rocha et al., 2003; von Baeyer et al., 2004).

Best Practices of Care

To minimize pain, it is important to use appropriate pharmacological and nonpharmacological interventions, combining these to provide more beneficial and effective treatment (Kuttner, 2010; Srouji et al., 2010). Nonpharmacologic methods used to minimize pain are classified into three categories: cognitive, behavioral, or combined (Uman et al., 2008; Srouji et al., 2010). Methods such as distraction, comfort positioning, music therapy, and hypnosis have shown promise for managing pediatric pain (Bandstra et al., 2008). When working with children, it is important to adapt interventions to their developmental level (Thompson, 2018). According to Liddle et al. (2013), four types of nonpharmacological interventions are strongly supported for use with infants that are experiencing pain. These preferred interventions include oral sucrose, breastfeeding, holding the infant, and attention-modifying techniques such as diversionary play.

The Role of Certified Child Life Practitioners

Child life is a nonmedical therapeutic profession that aims to promote positive development for patients and families, as well as reduce stress and anxiety associated with hospitalization (Thompson, 2018). The primary goal of CCLS is to mitigate the impact of stress or anxiety-provoking experiences (Bandstra et al., 2008; Thompson, 2018), they also play a role in preparing patients and families for painful medical procedures (Bandstra et al., 2008; Drayton et al., 2019). Previous research has shown that even minor painful procedures, like needle sticks, can affect a child's future response to pain, stress, and healthcare-related experiences (Williams

& Lascelles, 2020). CCLS are trained to deliver developmentally appropriate interventions such as therapeutic play, procedural preparation, procedure coping support, and education (Thompson, 2018). The presence of these interventions provided by a Certified Child Life Specialist (CCLS) has been shown to result in less distress from patients and families, better procedural cooperation, and a reported reduction in pain (Cristal et al., 2018; Drayton et al., 2019).

Research suggests that CCLSs also play a role in reducing the distress and anxieties associated with painful medical procedures (Cristal et al., 2018; Dastgheyb et al., 2018). Child life specialists use their developmental background, and the gate control theory of pain, to plan, advocate for and implement non-pharmacological pain management methods in conjunction with pharmacological methods. When combined with appropriate pharmacological interventions, strategies such as swaddling and oral sucrose have been shown to decrease behavioral distress and pain experiences during invasive medical procedures (Uman et al., 2008; Srouji et al., 2010). By reducing fear and anxiety, CCLSs mitigate potential adverse short- and long-term psychological impacts from hospitalization and medical procedures (Boles et al., 2020; Jenkins et al., 2023). CCLSs can provide developmentally appropriate pain management effectively, and provide coaching to caregivers before, during, and after medical procedures (Bandstra et al., 2008). Procedure support and preparation provided by child life specialists not only aid the patients but also the caregivers.

Studies have demonstrated that caregivers of children who receive preparation and support for procedures experience a significant reduction in anxiety and lower levels of distress (Cristal et al., 2018; Dastgheyb et al., 2018). Given the direct correlation between child and caregiver distress in medical settings, a reduction in parental anxiety positively impacts the child's emotional response which improves overall psychosocial outcomes during and after

hospitalization Li et al., 2007; Boles et al., 2020; Jenkins et al., 2023).

Health Care Professionals' Perceptions of Child Life Specialists

In surveys that recorded nurses' beliefs regarding nonpharmacological pain management practices, nurses reported that they were aware of and acknowledged its significance, yet they reported that they rarely utilized them in clinical settings (Cole et al., 2001; Bandstra et al., 2008; Polkki et al., 2018). Researchers suggested that collaborating with nurses to make an organizational change in the culture of ED clinicians and providing nurse education about nonpharmacological methods could be critical steps in improving pediatric pain management (Cregin et al., 2008; Foster, 2013; Williams et al., 2019; Wilson & Pendleton, 1989). Additionally, previous research has shown the positive impact that a child life specialist has on the child, family, and staff experience when it comes to painful procedures (Hyland et al., 2015; Drayton et al., 2019). But little research examines the relationship of child life specialists with other healthcare professionals. Two previous studies found that child life specialists had a "broader view" of their role than other healthcare professionals (Gaynard, 1985; Cole et al., 2001). Gaynard reported that a majority of healthcare professionals identified "Preparation and orientation" as a primary responsibility of the CCLS role, and the CCLS responses in the study aligned with that answer. However, some healthcare professionals viewed "Amuse/Entertain" as a primary responsibility of a CCLS (Gaynard, 1985; Cole et al., 2001). Drayton and colleagues (2019) conducted a study focusing on nurses' perceptions of the impact of CCLSs and indicated that further research is needed to examine nurses, and other healthcare professionals, to understand the depth and diversity of the role of the child life specialist. Given the importance of a child life specialist and the overall positive outcomes of a child, it is important to examine their impact empirically, but these premises are grounded in theory.

Theoretical Framework

Bronfenbrenner (1979) developed the ecological systems theory to explain how a child's growth and development are influenced by factors within the child and their environment. There are many ways that the ecological systems theory applies to the hospital setting (see Figure 1). The microsystem includes individuals that directly interact with the child such as the parents and siblings that influence development (Bronfenbrenner, 1979). A patient is affected by their surrounding microsystem which in the hospital would include practitioners they interact with such as doctors, nurses, and CCLSs. The next layer of the ecological systems theory is the mesosystem, which describes the relationship between those that make up the microsystem such as the family of the child and their immediate community (Bronfenbrenner, 1979). In the hospital, this layer would include interactions and dynamics between the medical personnel that act in the microsystem, for instance, the nurses interacting with CCLSs. The Exosystem encompasses indirect influences on the child's development that do not directly interact with the child but still have an influence on the child's development (Bronfenbrenner, 1979). For example, the workplace of the caregiver, or their nurses' knowledge of child life services and nonpharmacological pain management. The macrosystem represents the social and cultural context the child develops in and its influence flows down through all the layers to the individual (Bronfenbrenner, 1979). Such as the status of CCLSs and child life interventions in the ED. Beyond the macrosystem, the chronosystem is the environmental events and transitions that occur over time, such as the death of family members, historical events, and natural disasters (Bronfenbrenner, 1979). Bronfenbrenner's (1979) ecological systems theory helps explain how factors in the hospital setting might influence patients and child life interventions in the ED.

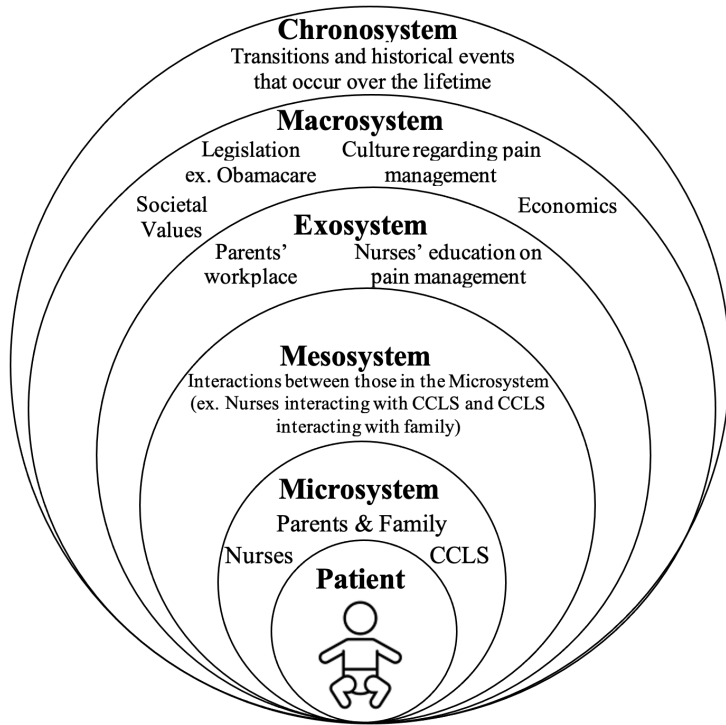


Figure 1: *Ecological Systems Theory in the Pediatric ED*

II. PRESENT STUDY

While previous research has evaluated the pain knowledge and attitudes of pediatric nurses in various inpatient units, nurses' understanding of child life specialists' role, and the impact of CCLSs on patients' painful experiences in the ED, there is still a clear need to examine pediatric ED nurses' perceptions of the role of child life interventions in pain management, and examining these nurses' pain knowledge and attitudes for infants, aged 12 months and under, in the ED. Thus, the present study seeks to examine nurses' knowledge and attitudes regarding pediatric pain and pain management, utilization of non-pharmacological pain management methods, and perceptions of the role of child life specialists during painful procedures. Additionally, this study will investigate demographic predictors of nurses' pediatric pain knowledge and attitudes.

The present study has two primary aims:

- 1) To investigate nurses' knowledge and attitudes regarding pediatric pain and types of pain management practices in hospitalized infants. Based on past research (Manworren, 2011; Thomas et al., 2015; Pölkki et al., 2018; Smeland et al., 2018; Yackey & Rominger, 2018), it was hypothesized that nurses will have adequate knowledge of how to assess infant pain and the common pharmacological methods of pain management, indicated by a score of at least 80% on the PNKAS. But it was expected that the results of this study would reflect that there is a lack of nonpharmacological pain management methods being utilized in the pediatric ED for infants.
- 2) To examine if nurses' perceptions of pain and pain management for pediatric patients relates to their decision to utilize nonpharmacological methods, such as child life interventions. Results were expected to show that nurses' perceptions of pain and pain

management vary by patient age such that they are less inclined to use nonpharmacological practices with patients under 12 months of age.

III. METHODOLOGY

Participants

RNs were recruited to participate in a voluntary survey through regional nurses' association email lists, Texas State University School of Nursing Alumni email lists, as well as through social media groups on Facebook comprised of registered nurses. All participants were 18 years of age or older and included those who are currently employed as an RN.

The participants in the online Qualtrics survey included a total of twenty-six RNs. Of the participants, a reported 80% were female ($n = 24$) with the remaining participants identified as male ($n = 5$). The mean age of participants was 31, with the reported ages ranging from 22 to 68 years of age. Most participants held a Bachelor of Science in Nursing (73.3% Bachelor's, 16.7% Master's) and 89.3% reported being employed Full-time. Years of nursing experience varied with most respondents reporting working as an RN for less than one year ($n = 11$), followed by 1 to 3 years ($n = 4$), 4 to 6 years ($n = 8$), 7 years or more ($n = 6$). Out of the total participants ($n = 26$), 60% reported being currently employed in a pediatric ED.

Design and Procedures

This study utilized a mixed-methods design, as quantitative and qualitative survey data was collected from RNs who were currently working in pediatric settings and had experience working in a pediatric ED. Participants in this profession were chosen because of the role they have in patient care, pain assessment, and regular contact with child life specialists. The survey was developed to measure the perceptions and attitudes nurses have regarding child life interventions for infants 12 months and under in the pediatric ED.

Before beginning the survey, all participants provided informed consent. No identifying information was collected to maintain the respondent's anonymity. The survey included a questionnaire to assess the healthcare practitioner's general knowledge of pain and pain

treatment. Questions developed to measure the feasibility of the utilization of nonpharmacological methods and child life services, and the participant's self-reported likelihood of utilizing nonpharmacological methods and child life services was also included in the survey.

Measures

Demographics. Basic demographic information regarding participants' gender, age, race, ethnicity, educational background, and work experience as a nurse and pediatric nurse was collected. Participants provided information about current employment such as employment status (i.e., Part Time, Full Time, or PRN), typical shifts covered (i.e., day or night), length of employment with current hospital, and experience in the pediatric ED. Participants also identified whether they currently work with CCLSs, their previous experience working with CCLSs, and how often they contact CCLSs in their current employment position.

Perceptions of the CCLS role. To assess the participant's perceptions of the CCLS role in the healthcare setting the Health Care Professionals Perceptions of Child Life Specialists Questionnaire will be used (Cole et al., 2001; Gaynard, 1985). Items on the questionnaire measure the extent of contact with child life specialists, the perceptions of the primary responsibilities of child life specialists, and perceptions of the influence and importance of each health care professional. In the survey, respondents report their perceptions of the responsibilities of child life specialists by typing a response to the question "Based on your experience, what do you see as the primary responsibilities of a child life specialist?" Additional items were included to measure if nurses' perceived changes in patient, family, and staff behaviors when there is a lack of child life interventions or presence.

Use of Nonpharmacological Pain Management. To gain insight into respondents' nonpharmacological pain management practices this study utilized a section from a questionnaire

validated in Finland containing 10-items (Pölkki et al., 2001; He et al., 2010; Pölkki et al., 2018). Nurses' utilization of pain management methods was measured with the use of a Likert scale from 1 (not at all) to 5 (always) and a supplementary question that prompted respondents to report who initiates the use of the listed methods. Pain management methods included in this instrument consist of four categories: physical methods, parental counseling, sucrose/non-nutritive sucking, and music.

Pediatric nurses' knowledge and attitudes survey (PNKAS). To measure nurses' knowledge and attitudes regarding pediatric pain and pain management the Pediatric Nurses' Knowledge and Attitudes Survey (PNKAS) instrument was included. The PNKAS was adapted from McCaffery and Ferrel's (1997) Nurses' Knowledge and Attitudes Survey Regarding Pain (NKAS) to reflect pediatric pain management practices that differed from adult practice standards (Manworren, 2001). The adaptations made by Manworren (2001) included altering medication dosages, changing analgesic types, the addition of procedural pain management items, and referring to patients as "infants," "children," and "adolescents." The contents of the survey cover general pediatric pain management, pain assessment, as well as pharmacologic and nonpharmacologic pain management (Manworren, 2000; Rieman et al., 2007; Smeland et al., 2018). The PNKAS is a 42-item survey comprised of three subsections. The first is 25 true or false questions, the second is 13 multiple choice questions, and the third consists of two case studies with 4 questions. Each item on the survey is assigned a score of 1, and scores range from 0 to 42, with higher scores reflecting that more correct answers were provided. Scores 80% and above are regarded as having a passing score, implying a satisfactory level of knowledge and attitude regarding pediatric pain. Manworren (2001) reported that the internal consistency of the PNKAS has been determined to have an acceptable level of internal consistency ($\alpha = 0.78$).

IV. ANALYTIC APPROACH

To assess knowledge of pediatric pain and pain management, scores on the PNKAS were summed. Descriptive statistics were calculated to identify participant education, clinical experience, as well as knowledge of and experience interacting with Child Life Specialists. Pearson's correlations were conducted to determine if there was a linear relationship between nurses' knowledge and attitudes, education, and experience. Next, descriptive statistics were used to summarize the respondents reported pain management practices and perceived importance or influence of the child life specialist's role in the psychosocial and physical well-being of patients. A correlational analysis was conducted to evaluate how nurses' knowledge and attitudes regarding pain and pain management practices are related to their utilization of nonpharmacological methods for infants. Then, mean ratings of the importance of child life specialists to patients' physical and psychosocial well-being were examined.

Responses to the open-ended question "Based on your experience, what do you see as the primary responsibilities of a child life specialist?" were qualitatively examined and categorized using thematic analysis. Patterns were observed within all the responses, grouped together, and then divided into subcategories that were defined using the standards of clinical practice outlined by the Child Life Council (2001). Once the categories ($n= 4$) present in the responses were identified, all responses were coded for the presence or absence of each category.

V. RESULTS

Descriptive statistics were conducted to identify participant education, clinical experience, as well as knowledge of and experience interacting with Child Life Specialists. These revealed that 83% of respondents work with Child Life Specialists in their current employment. Of those participants, four reported having no knowledge of CCLS role prior to their current employment. It was identified that 22% of respondents received passing scores on the PNKAS, indicated by answering 80% or more of the 42 items correctly.

To examine Research Question 1 (nurses' knowledge and attitudes regarding pediatric pain and pain management). Pearson's correlations were used to determine if the respondent's level of education predicted the respondent's PNKAS score. This analysis revealed no statistically significant relationships, however, a positive correlation was found revealing that increased education related to higher PNKAS scores, $r = .022, p < .05$. This indicates that those with more education have likely had more exposure to pediatric pain management practices, possibly influencing their score on the PNKAS.

A correlational analysis was conducted to investigate Research Question 2, (how nurses' knowledge and attitudes regarding pediatric pain management would relate to their utilization of nonpharmacological methods, such as child life interventions). The utilization of nonpharmacological pain management practices reported by the participants is summarized in Table 1. Most nurses reported using the physical method of holding "nearly always/always" as well as the use of breastfeeding. The techniques that were most reported to be used "very seldom/sometimes" included recorded music and the use of pacifiers with sucrose. The data revealed less than half (41.7%) of the respondents are in contact with child life specialists "Several times a day," while 17% reported "never" contacting child life specialists in their

current position. It was reported by 75% of the participants that nurses were typically the facilitators. The remaining 25% identified child life specialists as facilitators.

Next, ratings of child life specialists’ importance in patients’ psychosocial and physical well-being were examined. The data revealed that 83% of respondents assigned both child life specialists and nurses high ratings of importance in patients’ psychosocial well-being. For ratings of importance in patients’ physical well-being, 83% of respondents assigned nurses high ratings, alternatively, 58% of respondents assigned child life specialists high ratings.

Table 1. *Nonpharmacological Pain Management Practices*

	No Use	Very Seldom/ Sometimes	Nearly Always/ Always
Physical Methods			
Use of facilitated tucking	2	2	5
Use of holding	0	1	8
Use of positioning	0	4	5
Use of touch	0	6	3
Parental Counseling			
Use of breastfeeding	0	3	6
Use of kangaroo care	0	6	3
Sucrose/non-nutritive sucking			
Use of sucrose PO	0	4	5
Use of pacifier and sucrose	0	7	2
Music			
Use of recorded music	0	8	1
Use of live music	0	5	4

Qualitative responses (n= 12) to the question “Based on your experience, what do you see as the primary responsibilities of the child life specialist?” were derived from the completed surveys and coded into four categories which included the following: Education/Preparation, Facilitate Coping, Emotional Support, and Family Support. See Table 2 for further detail on each

category. Most responses accounted for Education/Preparation (50%) and Facilitate Coping (58%) as primary responsibilities of child life specialists. An example of a response that contains both these categories was “Child life specialists help gear procedures and medical terminology more towards an age appropriate level of understanding and provide comfort for the patient and families.” The least reported perceived responsibilities included Emotional Support (25%) and Family Support (33%).

Table 2. *Description of Child Life Specialist Responsibility Categories*

Category: definition	Description (Child Life Council, 2001)	Example Response from Survey
Education/Preparation: education and/or desensitization related to medical procedures	Psychological preparation from potentially stressful experiences	“Help children cope with any interventions that may seem scary to them”
Facilitate Coping: teaching strategies or supporting patients/families during stressful situations	Stress reduction techniques to facilitate adaptive coping	“To help ease patient” anxiety regarding procedures to obtain an optimum outcome.”
Emotional Support: assisting with processing emotions related to hospitalization	Support during identified stress points	“Helping children navigate through their hospital experience.”
Family Support: providing teaching, and emotional support specific to parents, siblings, or the family unit.	Education of families and professionals regarding child development and psychosocial care.	“Help educate families and children on hospital settings and procedures.”

Explanations provided by the participants for the items that measure if nurses’ perceived changes in patient, family, and staff behaviors when there is a lack of child life interventions or presence were coded into the same four categories described in Table 2. Most responses mentioned an increase in anxiety or stress for all three of the populations and these responses were categorized as Emotional Support. When compared to other questions in the survey, these items had lower participation. When asked about changes in patient’s behavior ($n= 6$), 50% of responses were categorized as Emotional Support because an increase in anxiety or fear was

mentioned. For parent behaviors ($n= 5$), 80% of responses fell into the Emotional Support category because anxiety or stress was included in the explanation. An example of a response that is in this category is: “More stressed about their child.” Changes in coworkers’ behavior had the least amount of data ($n= 3$). The majority (67%) of the responses were categorized as Emotional Support. One of those responses was: “Higher stress due to feeling the burden of needing to act as a child life specialist.”

VI. DISCUSSION

Child life specialists are healthcare professionals who are trained in non-pharmacological pain management methods to be able to advocate for and implement these interventions to support patients and families through their medical experiences. Although child life specialists offer evidence-based interventions, past studies have indicated that other healthcare professionals do not broadly recognize the depth of their role (Cole et al., 2001; Drayton et al., 2019; Gaynard, 1985). Findings in the present study reveal that many nurses recognize the significant impact that child life specialists have on the psychosocial well-being of patients and families, but that there is a lack of recognition for the influence child life interventions have on the physical well-being of patients. Participants reported rather frequent contact with CCLSs. For example, almost half (41.7%) of respondents reportedly had contact with CCLSs “several times a day”, while a smaller portion (17%) reported “never”. CCLSs must assess the needs of the patients present in their area of work and prioritize whom they identify as having the highest need. CCLS coverage or availability varies among hospitals and settings with a smaller CCLS presence may not have the bandwidth to consistently provide support or pain management interventions for infants.

The reported low rate of CCLSs facilitating nonpharmacological pain management techniques with infants could be explained by the urgent nature and the high number of patients that present to EDs at any given time. These combined factors may simply cause there to be little opportunity for CCLSs to realistically be able to provide interventions for infants in this environment. With the reported utilization of nonpharmacological pain management techniques, the most reported methods are arguably the most accessible because they are physical methods that may not require additional resources. For example, the most frequently reported methods were the use of holding, and encouraging parents to breastfeed, methods may not require

additional resources outside of the adults and equipment already present in the patient room. Alternatively, the methods that were most reported to be used “Very Seldom/Sometimes” included the use of pacifier and sucrose, and recorded music, which logistically may require additional resources to implement. CCLSs are in a unique role where they can advocate for multimodal pain management and facilitate the implementation of nonpharmacological pain management. The lack of reported CCLS presence as facilitators may explain the seldom use of nonpharmacological pain management methods reported in the present study.

The results of the present study revealed that most of the pediatric nurses who participated in the study had unsatisfactory levels of knowledge and attitudes toward pain management in children. Data indicated that satisfactory levels of knowledge were associated with more years of experience working in pediatric nursing and a higher level of education. Knowledge deficits among nurses on this topic have been internationally recognized and is a finding that persists (Alexander & Manno, 2003; Rodkey & Ridell, 2013). Because participants with more years of pediatric experience and more education received higher PNKAS scores, it could be interpreted that having more exposure on the job contributes to increasing their understanding of child life services and awareness of nonpharmacological pain management to offer or implement.

Qualitative findings demonstrated the respondents' perceptions of child life responsibilities to overall include emotional support, family support, facilitating coping, and education/preparation. However, pain management was not provided as a responsibility. The data illustrates that respondents recognize the value that CCLSs have on impacting the psychosocial well-being of patients and supports that they may not recognize the impact CCLSs have on the physical well-being of patients. It should be acknowledged that the provided text

responses were brief, and some may have been intended to include pain management. For example, “Help make procedures less anxiety invoking. Help prevent hospital trauma,” could be interpreted as inclusive of many aspects of child life interventions, pain management included. For the purpose of the present study, such responses were categorized based on their unambiguous content.

Limitations

The present study had several limitations. The lack of responses from eligible participants limited the amount of data collected. Due to the relatively small sample size and lack of diversity among participants, the results have limited generalizability and might not extend across a broader sample. A larger sample size would have provided higher statistical significance, more detailed responses, and greater insight into the perspectives of nurses. Another limitation is that the results might be influenced by information bias. Because the questionnaire is self-report the responses may not accurately show the attitude of nurses. Due to concerns of social desirability respondents might have over-reported the nonpharmacological pain management practices in their unit. Participant fatigue was apparent because responses decreased or became less detailed as the survey progressed which may have limited the ability to obtain detailed or honest responses. With brief text responses, it is difficult to fully capture or interpret the participants' perceptions or understanding. The present study did not measure why CCLSs were not included as facilitators of nonpharmacological pain management methods, or what factors may have affected this apart from time or RNs' awareness of the availability of CCLS services. Future researchers should evaluate if the inclusion of CCLSs is related to the age of the patient, CCLS availability, patient acuity, and RNs' experience. Furthermore, future directions should focus on utilizing these measures in a more concise way with larger sample sizes to promote

generalization and further understand various perspectives.

Implications

Discrepancies between the perceptions of child life specialists and the use of nonpharmacological pain management implicate the need for ongoing education and awareness of infant pain management and the role of child life in the ED. Increased awareness of child life interventions and their benefits would impact the rate of child life referrals made by healthcare practitioners and could lead to greater management of infant pain in the ED with the use of nonpharmacological techniques. Increased knowledge of non-pharmacological pain management techniques among nursing staff may increase the likelihood of these techniques being used for infants. This would allow an opportunity for collaboration and to bridge the gap in services when a CCLS is not available due to higher priority needs that may be present at the same time in the ED.

Children experience pain during hospitalization. Although the findings in the present study are in the context of the ED, the literature review revealed that infants are an at-risk population for under-treatment of pain in all areas of the hospital (Alexander & Manno, 2003). Patients admitted to the hospital in acute or critical care areas may experience prolonged or recurring pain. The findings from the present study imply the need for more education on interventions appropriate interventions for infants in the ED and reinforce previous research findings that education across all units that work with infants would be beneficial (O'Neal & Olds, 2016). CCLSs serve as advocates and supportive facilitators of nonpharmacological methods to supplement pain management while ensuring the methods used are individualized to the developmental age of the patient. Nurses in the frontline are instrumental in effectively managing pain which can improve patient care and outcomes. Having a comprehensive

understanding of pain management can improve practices of care and the production of the best outcomes for pediatric patients of all ages.

Important demographic variables emerged as predictors for higher knowledge of pain management techniques and can be used to identify target populations for educational interventions. The present study can be used to inform the development of interventions such as professional development training, orientations, in-services, and informational flyers focused on educating healthcare professionals on best pain management practices. The findings justify the necessity of continued staff education on pain management and child life interventions through continuing education units or competencies. Additionally, the research perpetuates the need for more education earlier on in professionals' careers. This applies to all disciplines including nursing students and child life students whose earlier exposure to pain management can improve the likelihood of their implementation when those students emerge as clinical professionals. If educational interventions on pain management are incorporated into the curriculum early in the education for these professionals it may improve their familiarity with and confidence in the ability to implement pain management practices as professionals, which will increase the utilization of pain management in clinical practice.

CCLSs work alongside and collaborate with many healthcare professionals that make up an interdisciplinary team that includes but is not limited to nurses, physicians, physical/occupational therapists, respiratory therapists, and social workers. Past research supports that the role of child life has not been fully understood by other healthcare professionals. CCLS play a special role in patient care, especially in pain management which greatly affects patients' physical well-being. The small sample in the present study ranked CCLSs to have low importance to patients' physical well-being, which supports previous studies

that identified other healthcare professionals to have a limited understanding of child life responsibilities. CCLSs' many responsibilities and interventions can be useful for facilitating other staff responsibilities as well. For example, using child life interventions including pain management strategies and distraction can benefit treatment sessions being conducted by respiratory, physical, or occupational therapists. With an interdisciplinary team, it is important to collaborate with and continually learn about the roles of others that are part of the team to be able to utilize the varied skills each member offers to improve patient care. If the child life specialist's role is valued and fully understood by the medical team, then the field can advance and more effectively provide nonpharmacological interventions to infant patients during painful procedures in the ED.

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