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Nurses' management of children's acute postoperative pain: A theory of bureaucratic caring deductive study



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ABSTRACT

Background: Few studies have examined the translation of nurses' knowledge of pain management into clinical practice or how nurses negotiated the bureaucracy of caring to treat patients' acute pain.

Purpose: This study describes factors that influence pediatric nurses' actions in caring for hospitalized children's acute post-surgical pain.

Method: Ray's Theory of Bureaucratic Caring provided the theoretical framework for this mixed methods study of ethnography and human factors engineering. Fourteen nurses were observed throughout their shifts (175.5 h) to elucidate humanistic and bureaucratic influences.

Findings: Of 105 pain assessments, nurses intervened with pharmacologic ($n = 45$) and biobehavioral ($n = 13$) interventions for pediatric patients' post-surgical pain in less than 11 min; and 25 assessments revealed patients did not have pain. Pain was assessed and no intervention was provided to 4 patients who were asleep, 5 patients who refused, 2 patients who had no ordered analgesics and 10 patients who were assessed prior to peak effectiveness of their prior analgesic. Overall pain was well-controlled. Of the 28 themes identified, the interplay of 6 categorized to the social/cultural humanistic, 7 political, and 6 technologic/physiological bureaucratic dimensions most strongly influenced pain care.

Discussion: To achieve optimal pain care outcomes, nurses' and parents' pain management knowledge was less influential for clinical practice translation than nurses' negotiation of other dimensions of bureaucratic caring.

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Pain is a complex phenomenon that involves physical, sensory, affective, emotional, cognitive, and behavioral components that are interrelated with developmental, sociocultural, environmental, spiritual, and contextual factors that affect how pain is perceived, managed, and evaluated (Anderson & Reynolds Losin, 2017; Institute of Medicine (US), Committee on Advancing Pain Research, Care, and Education, 2011; Raja et al., 2020; Yamada, et al., 2017). Actions and reactions to pain may be the result of personal, patient, and organizational forces that nurses must negotiate (Beckett et al., 2015; Booker, 2014; Makhoul et al., 2019; Tomaszek & Dębska, 2018). If desire to care and respond to patients' conditions are the action; nurses' responses based on knowledge and experience, and tempered by intuitiveness, workload, and interpersonal dynamics, provide the final reaction (Alotaibi et al., 2018; Bartoszczyk & Gilbertson-White, 2015; Beckett et al., 2015; Potter & Wilson, 2017; Yin et al., 2015). The reaction determines the performance outcome: the potential for optimal pain relief.

Nursing practice is also complex (Huber et al., 2021; Notarnicola et al., 2017; Potter et al., 2005; Ray, 1994; Ray & Turkel, 2014;

Solomon et al., 2016; Virkstis et al., 2019). When caring for hospitalized patients with acute pain, the characteristics of the organization must be considered. Competing priorities, forces, and barriers within the organization, as well as the general culture of the organization, influence reactions to acute pain (Olsson et al., 2020; Potter et al., 2005; Wisner et al., 2019).

Literature review

Knowledge of nurses' role managing children's pain and barriers to effective pain management have come from surveys, retrospective chart reviews and interviews (Alotaibi et al., 2018; Andersen et al., 2019; Beckett et al., 2015; Czarnecki et al., 2014; Czarnecki et al., 2019; Stevens et al., 2012, 2013, 2014; Twycross & Finley, 2013; Yamada, et al., 2017). These methods are surrogate strategies that have been used to inform our understanding of potential influence on nurses' pain management practices but fail to identify actual and contextual issues that may impact nurses' clinical practice. In addition, interviews alone may result in discrepancies between self-reported actions, social desirability, and actual clinical practice (Dihle et al., 2006; Twycross (2002, 2007a) emphasized the need to move from interview

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questionnaires to observational studies of how nurses manage children's pain in clinical practice.

Only four observations studies have examined the complexities of pediatric pain related nurse-patient-parent interactions, the potential environmental influences impacting nurses' pain assessment and management, or how nurses translate pain management knowledge and negotiate organizational influences to treat acute pediatric postoperative pain in clinical practice (Byrne et al., 2001; Smeland et al., 2018; Twycross, 2002, 2007a, 2007b, 2008; and Woodgate & Kristjanson,

1996). These studies stressed the need and demonstrated the strength of observational methods to better ascertain what happens in clinical practice and identify variables that may be susceptible to intervention. These studies focused on the effects of pediatric nurses' knowledge and attitudes regarding pain relief, perceived priorities, and nurses' abilities to overcome barriers to pain management, nurses' emotional challenges to with communication and management of pain, and adherence to clinical practice guidelines for pediatric pain management. Findings imply gaps between what nurses know and what nurses do (Table 1).

Table 1
Observational studies of pediatric postsurgical pain management.

Author	Sample	Methods	Purpose	Themes
Byrne et al. (2001)	16 children 8–16 (mean 12 ± 2.9) years of age on a pediatric surgical unit in a children's hospital in Liverpool, England	<ul style="list-style-type: none"> Observations of 13 nurses caring for 16 children daily after orthopedic surgery on postoperative days 2–6 out of hospital stays lasting 3–21 days 2–10 min open-ended interviews with nurses 5–35 min open-ended interviews with patients and 20 parents 	Observe patient-nurse communication related to pain.	<p>Major Theme: "doing well"</p> <ul style="list-style-type: none"> Parents considered their child to be doing well when 'enduring' or 'coping with' pain. For nurses, doing well meant reaching functional milestones, staying on expected schedule of recovery, and not displaying pain behaviors regardless of whether the patient was in pain. "She's great. She doesn't even say when she's in pain" (p. 71). Both parents and nurses had minimal expectations of pain relief. "You just can't seem to control their pain. As nurses you're trained to believe that you can keep the patient pain free, but well, that just doesn't happen" especially with required nursing activities; "She's alright until you turn her and then I'm the wicked witch" (p. 73). When pain behaviors were observed, nurses construed pain as unreal, unwarranted or not-deserving of intervention Nurses attributed patients' displays of pain behaviors and distress as a result of anticipating pain rather than a true pain experience. Nurses denied the legitimacy of pain behaviors, instead blaming parental influence or personality rather than pain. Nurses even indicated that patients did not deserve help for their pain behaviors and distress since they were malingering or complaining; "teenagers are a pain any way" (p. 72). <p>Byrne concluded: Nurses defend themselves emotionally against children's pain, which may compromise communication</p>
Smeland et al., 2018	266 children: 89 were 0–5 years old 40 were 5–7 years old, 136 were >8 years old, & 1 child's age was unknown	<ul style="list-style-type: none"> 193 Nurses from 6 post-anesthesia care units (PACU) completed the Pediatric nurses' knowledge and attitude survey-Norway (PNKAS-N). 138 nurses were observed caring for 266 children (70 h/unit, Total of 416 h). 	<ul style="list-style-type: none"> Identify PACU nurses' pediatric postoperative pain management knowledge, attitudes, and clinical practices. Determine whether there is a link between knowledge and actual practice, using a survey and observations. 	<ul style="list-style-type: none"> Knowledge deficits, mainly in pharmacologic management, such as in risk of addiction and respiratory depression identified Pain was assessed using validated tools in 19% of the children; and only 9% of children aged <5 years. More than 66% of children received an inadequate dose of morphine postoperatively. <p>Smeland, et al., concluded: Nurses have knowledge deficits about pediatric pain management and do not always use their knowledge in practice, particularly in relation to pain assessment. There is a need to improve nurses' knowledge of pediatric pain management and to test interventions that support the use of that knowledge in practice.</p>
Twycross (2002, 2007a, 2007b, 2008).	13 nurses on one surgical unit in an urban teaching hospital in Melbourne, Australia	<ul style="list-style-type: none"> Observation of 5 h/shift for 2–4 shifts for a total of 175 h of structured observation using a clinical pain assessment tool, field notes, and audit of drug doses 12 nurses completed a Pain Management Knowledge Test (2007b). 12 nurses completed the Pediatric Pain Training Needs Questionnaire to determine how important nurses considered pain management tasks to be for 4 age groups of patients (2008). 	Describe how pediatric nurses manage children's pain on a surgical ward	<ul style="list-style-type: none"> Nurses ranked obtaining a pain history, use of behavioral indicators, administration of analgesics, use of biobehavioral methods, reassessment, documentation, involving parents, communicating with patients, and seeking advice from the multidisciplinary team as moderately to highly critical for effective pain management (2008). Nurses administered analgesics when children complained of pain rather than on a regular basis (2002; 2007a). Nurses did not prioritize pain management in actual clinical practice (2002; 2008). Specifically, nurses did not (a) obtain a pain experience history routinely on admission, (b) use valid and reliable pain assessment tools consistently, (c) take into account behavioral or physiological indicators of pain (d) provide pre-emptive analgesia (e) use biobehavioral interventions for pain relief routinely, (f) involve parents in the assessment and management of their child's pain, (g) seek advice from the multi-disciplinary team regarding managing children's pain, (h) document pain assessments and interventions, (h) re-assess for effectiveness of pain management interventions, (i) talk to children and their parents about all aspects of pain management (2002, 2007a, 2007b, 2008). <p>Twycross concluded: theoretical knowledge did not impact (1) nurses' analgesics practices (2) use of non-drug interventions (3) reassessment of pain or evaluation of intervention effectiveness (4) documentation, or (5) communication with the multidisciplinary team (2007b).</p>
Woodgate	11 children,		Describe how parents	Major Theme: "Take Care,"

(continued on next page)

Table 1 (continued)

Citation	Sample	Methods	Purpose	Themes
and Kristjanson (1996)	2–6 years of age 22 parents, and 23 nurses on 2 pediatric surgical units in a children's hospital in central Canada.	<ul style="list-style-type: none"> • Exploratory observation: • 2–8 h/day, up to 6 days after surgery for a total of 250 h of observations. • Informal interviews with nurses • Semi-structured open-ended interviews with parents and pediatric patients 	and nurses respond to young children's post-operative pain.	<ul style="list-style-type: none"> • Parents provided comfort measures and vigilantly monitored their children's pain. • Nurses used relied mainly on parental reports to assess pain, providing technical care but unable to adequately relieve children's pain. • Communication between parents and nurses regarding pain were typically limited to whether the child was hurting and when the last analgesic was administered. • Nurses had difficulty articulating how they knew a child was in pain or verbalizing the uniqueness of each child's pain behaviors, instead referring to their lack of experience in caring for particular patients, "haven't taken care of him" (p. 277). • Nurse to nurse communication regarding pain was general, relying on adjectives such as "fine" or "good" (p. 280). • Parents and nurses valued children for being "good" and tolerating or coping with more pain than other children who displayed more overt signs of pain (p. 278). • Time was a barrier to nurses' effectiveness in assessing for pain. Episodic pains, such as bladder spasms, were often missed since nurses' time spent assessing children was brief, infrequent, and resulted in delays of analgesic administration. Nurses were observed providing opioid analgesics every 3–4 h, but often children experienced pain again 2 h later • Nurses frequently did not reassess the patient to determine analgesic effectiveness. • Duration of pain seemed to be more important to parents and nurses than intensity of pain. • Nurses gave most analgesics during the first 48 h after surgery when they expected pain to be moderate to severe. Nurses then expected pain to subside and were less concerned about mild to moderate pain. • Nurses prioritized incision pain over other "unusual pains" (p. 278). • Children's diagnosis and acuity resulted in a hierarchy of appropriateness for pain with more pain being expected among more ill children or those with more visible injuries.

Twycross (2007a, 2008) suggests professional socialization, lack of role models to challenge the organizational culture toward pain management, and a lack of prioritizing pain management as explanations for these gaps. However, these researchers focused on individual nurse-patient-parent interactions related to pain, isolating these interactions from the complexities of managing a patient load on a postsurgical unit. Through observation, these studies documented how pediatric nurses actually manage pain; but, they failed to ascertain how nurses' decision-making processes and organizational factors that may have influence pain assessment and management clinical practices. While these studies provided evidence of poor pain management practices on 10 postsurgical units over 20 years, none of these studies were conducted in the United States; so they are insufficient for ascertaining whether these practices truly reflect a more general professional culture of pediatric nursing (Twycross, 2007a, 2008). Therefore, additional observational studies are needed to examine how nurses integrate pediatric pain management into their daily care tasks, how nurses make pain management decisions, and how organizational context, such as policies, resources, prevailing organizational values and beliefs, teamwork, and leadership influence nurses pain management (Woodgate & Kristjanson, 1996).

Theoretical framework

The Theory of Bureaucratic Caring explains the work of nurses in clinical practice and factors that affect performance outcomes (Ray, 1989). Bureaucratic caring delineates educational, social/cultural, and spiritual/religious dimensions of caring as "humanistic;" and describes political, technologic/physiological, economic, and legal dimensions as "bureaucratic." Caring is centered among the equally spaced dimensions, emphasizing the goal of nurses and convergent forces that

influence nursing care (Fig. 1). Arrows toward or away from care illustrate the dynamic interplay of care dimensions, and their influence on nurses' abilities to achieve caring.

Inductively developed, the Theory of Bureaucratic Caring is based on qualitative research to advance the meaning of caring from a nursing administrative perspective and an understanding of hospitals as cultural systems (Ray, 1989; Ray & Turkel, 2014). The Theory of Bureaucratic Caring may provide guidance to better understand clinical practice but no clinical investigations have used the Theory as a framework. Based on pediatric pain management literature reviewed and a pilot study, the Theory of Bureaucratic Caring was adapted as the theoretical framework for this study of the structures, processes, environmental and cultural variables that nurses negotiate to manage acute postsurgical pain (Table 2).

The purpose of this study was to explore the clinical practice of providing acute pain care to hospitalized pediatric patients. Aims were (1) describe the structures, processes, and cultural/environmental variables that influence acute pain management in a pediatric post-surgical department; (2) deductively categorize influences using the 3 humanistic and 4 bureaucratic dimensions of the Theory of Bureaucratic Caring and (3) evaluate the interplay of care dimensions and nurses' negotiation of bureaucratic caring.

Methods

This mixed-methods study used human factors engineering (Potter et al., 2004; Potter et al., 2005) and ethnography (Cutler, 2004; Liamputtong & Ezzy, 2005). All methods were piloted at another children's hospital with 14 different nurses (1 night shift and 1 day shift for each day of the week). All nurse recruitment, observations, and interviews for this study were conducted by a nurse scientist who

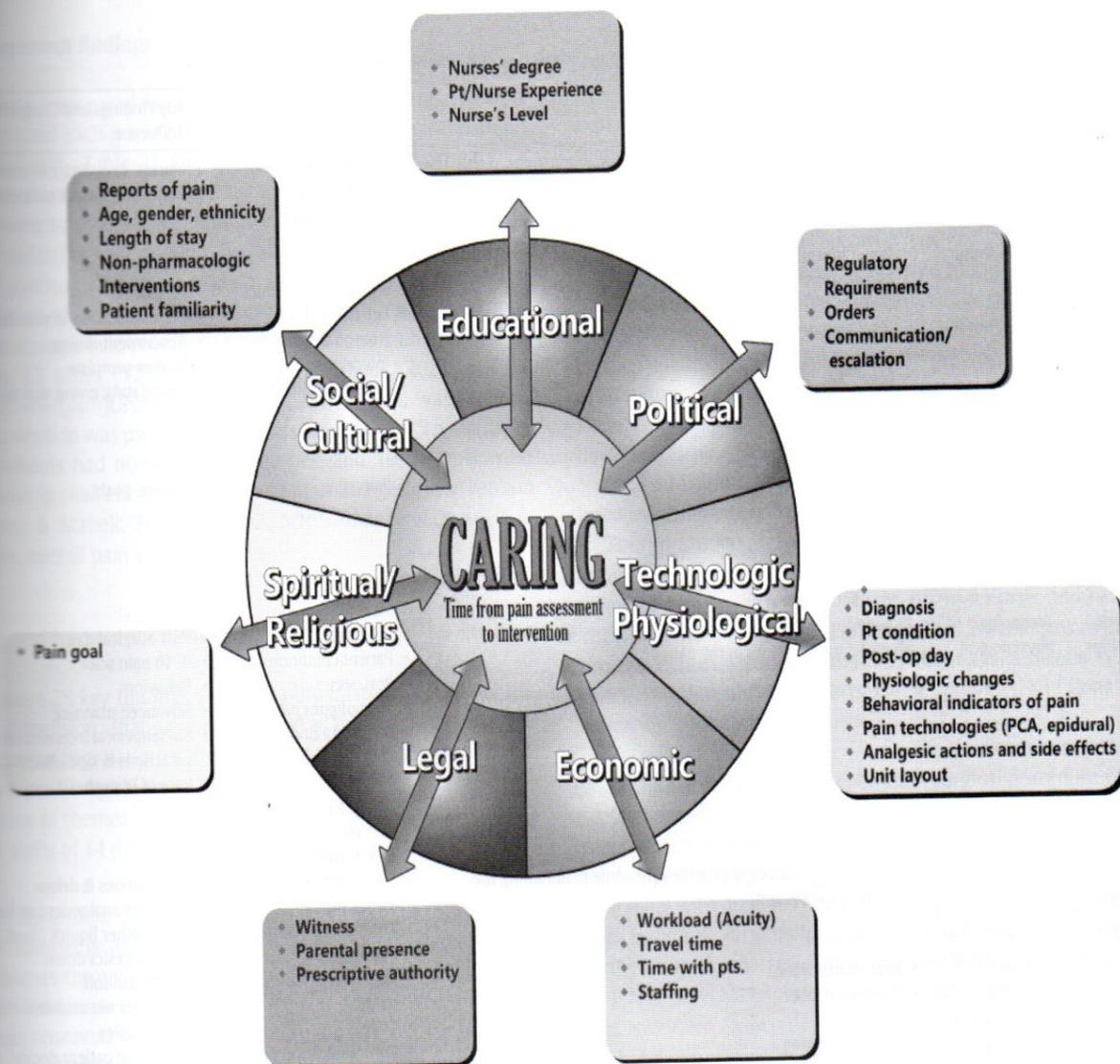


Fig. 1. Adaptation of the Theory of Bureaucratic Caring for the clinical problem of pediatric acute post-surgical pain.

clinically worked as a pediatric acute pain management clinical nurse specialist for over 15 years; but never at the children's hospital selected for this study.

Care was operationally defined as nurses' cognitive work and actions from the time of pain assessment to intervention (Battisto et al., 2009; Potter et al., 2004; Potter et al., 2005). Pain assessment included any information that alerted the nurse to the patient's pain, such as self-report, parent report, or pain behaviors. The administration of pro re nata (PRN), as-needed, analgesics and biobehavioral (non-pharmacologic) strategies were the interventions of interest. Cases were defined as the time and activities from pain assessment to pain intervention. Influences of case materials were previously reported (Manworren & Atabek, 2021).

Setting

After receiving institutional review board (IRB) approval, this study was conducted in the post-surgical department of a 297-bed free-standing, non-profit, Magnet-designated children's hospital in the United States. The department is staffed by 69 nurses who rotate between 2 and 18 bed units and provide care for more than 12,600 surgical admissions annually, with a mean daily census of 34.7 patients with a mean length of stay of 3.6 days.

Sample and sampling plan

Homogenous and judgmental sampling was used to obtain an information-rich understanding of the phenomenon (Cutler, 2004;

Liamputtong & Ezzy, 2005). Homogenous sampling was chosen to minimize variation in influencing factors by gender, shift, and role. Based on principles of homogenous sampling, the literature, and pilot data, observations were restricted to female nurses who worked full- or part-time on the weekday day shifts in direct patient care roles and did not have graduate nursing degrees. Nurses were classified as "Experienced" or "Less experienced" based on a threshold of 3 years in pediatric nursing. All nurses who met inclusion criteria ($N = 24$) were invited to participate in the study. Nurses were informed that the focus of the study was observation of their clinical care and factors that influence their pain assessment and management of post-surgical patients during a routine 12-h shift. Judgmental sampling allowed the researcher to use judgment to select appropriate members of the culture to observe. Thus, charge nurses were included in the sample, but were only observed when providing direct patient care. Nurses were contacted individually to gauge the nurse's interest in participating in a shift observation up to four weeks prior to the day of clinical observation. No nurses refused to participate or dropped out of the study. The researcher purposively shadowed one nurse at a time for an entire shift.

Since nurses' responses to indications of children's post-surgical pain and their negotiation of the bureaucracy of care was the focus of study observations, the IRB only required written informed consent from the observed nurses. Interactions with parents, visitors, physicians, other nurses, and other members of the healthcare team were noted. Observations and interviews were conducted until additional observations failed to provide new information or no longer changed the analysis (Cutler, 2004; Liamputtong & Ezzy, 2005).

Table 2

Humanistic & bureaucratic dimensions as defined by theory of bureaucratic caring and adapted for this clinical study.

Theory of Bureaucratic Caring			Adapted Model to Guide Data Collection	Study Findings and Categorized Themes of Influence
Humanistic Dimensions	Education	<ul style="list-style-type: none"> Educational programs Information Teaching 	<ul style="list-style-type: none"> Nurses' degrees Nursing level Patient experience Nurses' experience Reports of pain Age, gender, ethnicity Length of stay Non-pharmacologic interventions Patient familiarity 	<ul style="list-style-type: none"> Nurses' knowledge & experience Patients' previous pain experience Pain education
	Social / Cultural	<ul style="list-style-type: none"> Communication Compassion Concern Involvement Intimacy Love Empathy in caring Respect & trust in providing care Adhering to culturally defined standards of moral behavior 	<ul style="list-style-type: none"> Pain goal 	<ul style="list-style-type: none"> Pain alert Patient age Communication of pain expectation Assessment timing Broken promises Negotiating giving oral analgesics
	Spiritual / Religious	<ul style="list-style-type: none"> Acts of faith Empowerment Creativity Choice Hope "Brotherly love" 		<ul style="list-style-type: none"> Nurses' goals
Bureaucratic Dimensions	Technologic / Physiological	Knowledge and skill to operate and use equipment to maintain the physiological functions of the patient.	<ul style="list-style-type: none"> Diagnosis Patient condition Post-surgical day Physiologic changes Behavioral indicators Pain technologies (PCA, epidural) Analgesic actions & side effects Unit layout Workload (acuity) Travel time Time with patients Staffing Regulatory requirements Orders Communication / escalation 	<ul style="list-style-type: none"> Post-surgical day 0–10 pain scale Behaviors Advanced planning Biobehavioral interventions, analgesic actions & side effects Rate of IV push
	Economic	Allocation of resources to provide care while maintaining the viability of the system	<ul style="list-style-type: none"> Witness Parental presence Prescriptive authority 	<ul style="list-style-type: none"> Interruptions & delays Travel for analgesics (no liquids) Gather other liquids (food) to get oral analgesics down Patient handoff Analgesics not available Parents' roles Letting the patient decide Nurses' decisions Prompted assessment Consultation and teamwork Witness No analgesic orders
	Political	<ul style="list-style-type: none"> Role stratification Division of labor Power Decision making Communication patterns Regulatory influences Distribution of resources within an organization 		
	Legal	<ul style="list-style-type: none"> Responsibility Accountability Liability Right Rules and guiding principles of behavior 		

IV, intravenous; PCA, patient-controlled analgesia.

Data collection

Time, location, pain assessments, and interventions were recorded in real time as field notes for each nurse observation. In keeping with ethnographic research principles and to gain insight into nurses' decision-making processes and specific influences or difficulties encountered which may have affected the nurses' pain management decisions (Manworren & Atabek, 2021; Potter et al., 2005), nurses were asked after each pain management intervention: Tell me what influenced you in treating the patient's pain. At the end of the shift, nurses were asked: 1) What were your care priorities? Did they change during the shift and why? 2) What was your pain management goal? Were you able to achieve that goal? What helped you? What hindered you? All answers were transcribed in real time by the researcher and the transcription was verified by the nurse immediately after the end of shift interview.

Immediately after each shift, the researcher reviewed field notes for completeness. The hospital's pain assessment and analgesic policies and procedures were also reviewed. Field notes were examined for adherence and discrepancies with clinical observations and clinical tools,

processes, policies, and systems relevant to pain assessment and management at the hospital.

Data analysis (see details of qualitative analysis in supplemental information)

Five phases of qualitative data exploration were completed: (1) initial reading and review of individual shift observations, (2) reading pain assessment-to-intervention intervals, (3) second reading of individual shift observations, (4) constant comparison of additional shift observations with previous observations, and (5) final review of all pain assessment-to-intervention intervals across the study. Four levels of coding were used to analyze qualitative data describing: (1) nursing processes, (2) nurses' pain assessment and management practice, (3) influencing factors, and (4) categories of influencing factors according to the 7 dimensions of bureaucratic caring. Descriptive statistics were used to analyze influences, care dimensions, nurses' and patient characteristics, and nurses' workload. Analysis was supported by quotes and descriptions of pain assessment and intervention interactions.

Pain management findings

Observed nurses cared for a total of 65 pediatric patients; 46 were post-surgical and each nurse cared for at least 2 post-surgical patients during their shift (Table 3). Of 143 observed pain assessments, 38 were excluded because either medical patients were assessed or the assessments were prior to or after administration of a scheduled analgesic, including epidural or patient-controlled analgesia (PCA). There were 25 times that postsurgical patients did not have pain (24%). On average, nurses intervened for patients' post-surgical pain in less than 11 min, with pharmacologic interventions 45 times (43%) and biobehavioral interventions 13 times (12%). (Manworren & Atabek, 2021; SDC#1, <http://links.lww.com/JONA/A823>). Of the 22 times pain was assessed and intervention was provided, 4 patients were asleep, 5 patients received 2 patients had no ordered analgesics, and 10 patients were assessed prior to peak effectiveness of their prior analgesic intervention (Manworren & Atabek, 2021; SDC #2, <http://links.lww.com/JONA/A824>). Thus, overall pain was well-controlled.

Humanistic and bureaucratic dimensions

There were 28 key findings (1–6 per humanistic and 2–7 per bureaucratic dimension) that were categorized as themes that influenced pediatric nurses' negotiation of the bureaucracy of caring to manage patient acute post-surgical pain (Table 2).

Saturation of themes was reached after 11 shift observations, but a total of 14 shifts of 14 different nurses were completed (Table 3).

Observational dimension: 3 influential humanistic themes

Nurses' knowledge and experiences: All but 2 nurses had worked as pediatric nurses throughout their careers (Table 4). Half of the nurses had worked exclusively at the study site for their careers of 2–15 years. Thus, observed nurses had limited exposure to other nursing environments and other bureaucracies of caring.

The most common knowledge deficit observed was that nurses required patients to eat prior to administering oral opioid-containing analgesics. Since observed during care by 6 of the 7 nurses with >3 years of experience and only 1 nurse with <3 years of experience, this finding suggests that this is an old care myth or a practice that nurses adopt over time to manage opioid analgesic side effects. For all ordered oral opioid-containing analgesics, the electronic medication administration record (eMAR) had a note "take with food to avoid GI upset," suggesting the culture of the organization supported this knowledge deficit.

Nurses did not always wait for the onset or peak analgesic effect before performing painful procedures and reassessing patient pain. Based on the Pediatric Nurses (and healthcare providers') Knowledge and Attitude Survey (Manworren & LaPrise, 2021) and the American Pain Society's postoperative pain guidelines (Chou et al., 2016), additional knowledge deficits were rare, but 8 were observed during 5 shifts. Nurses' education and experience did not seem to influence these knowledge deficits or how nurses assessed and managed pain.

Pain education: An institutional pamphlet was given to families on admission. It defined pain and clarified, "while all pain cannot be stopped, almost all pain can be reduced." Three different nurses and 1 surgeon advised patients, parents, and a grandmother to avoid severe pain. When prompted, nurses educated mothers about analgesic effects, including onset, duration, and side effects. Nurses provided additional analgesic education upon discharge.

Patients' previous pain experiences: The most common type of surgery was orthopedic, but the most common surgical procedure was laparoscopic appendectomy (n = 6). Nurses, patients, and parents discussed their past experiences with pain. Previous pain experiences of 16 patients, specifically pain of previous surgeries and pain relief or lack of pain relief with previous analgesics and analgesic doses, were discussed with 9 nurses. Patients' previous pain and analgesic experiences informed nurses' analgesic dose and frequency decisions; yet patients who had previous experiences with surgical pain tended to have pain that was more challenging to control, as reported by patients and parents. "Usually, they give her something scheduled and morphine on top,

Table 3
Nurses' workload.

	Nurse	Assigned Pts	+ Admissions	- Discharges	Work or Off	Previously Cared for Pts	Post-surgical Pts	Medical or Trauma Pts	Cases	No Pain	No Intervention for Pain	Medical, Schedule, PCA or Epidural
Experienced Nurses	1	5	1	2	W	4	3	2	5	4	2	7
	2	5	1	1	O	0	3	2	3	0	0	6
	3	6	2	3	O	2	4	2	3	2	2	2
	4	5	1	2	W	3	2	3	3	0	0	3
	5	5	1	2	O	0	3	2	0	1	0	3
Charge Nurses	6	5	1	1	O	1	2	1	10	2	5	0
	7	4	1	1	W	2	3	1	1	2	0	4
	8	3	1	1	O	1	4	1	4	2	1	1
	9	5	1	4	W	4	5	0	4	2	2	2
	10	5	1	4	W	4	5	0	4	2	2	2
Total	11	4	0	0	W	1	3	1	8	2	3	1
	12	4	1	1	W	3	3	1	2	2	0	0
	13	4	1	1	W	3	3	1	2	2	0	0
	14	4	1	1	W	3	3	1	2	2	0	0
Total	6	5	1	1	O	1	4	1	7	1	3	5
	7	4	1	1	W	0	3	1	5	2	0	3
	8	5	1	3	O	1	4	1	3	3	4	1
Total	14	65	14	23		23	46	19	58	25	22	38

Total = 143 Assessments

Order: Nurse indicates the order in which nurses were observed, for example the first 5 nurses observed had less than 3 years of pediatric experience, whereas the 6th nurse observed was a charge nurse working in a direct care role and the 7th nurse observed was an experienced nurse.
Assigned patients (Pts): were the total number of unique patients the nurse was assigned to care for during her shift. Admissions were the number of patients the nurse admitted to the unit during her shift.
Discharges: were the number of patients the nurse discharged to home during her shift.
Worked: indicates the nurse worked the day before the observation; whereas O indicates the nurse was off work the day before the observation.
Previously Cared for Patients: indicates the number of patients the nurse had cared for during previously worked shifts. Three nurses had never cared for any of their assigned patients prior to the observed shift.
Worked: indicates the number of pain assessments to interventions the nurse completed during her shift.
No Pain: indicates the number of assessments in which no pain was reported, whereas No intervention for pain, is the number of assessments that indicated the patient had pain; but the nurse did not provide an intervention.
Medical, Schedule, PCA or Epidural: indicates the number of time pain management interventions were provided that were not PRN and therefore not in scope for this study, for example patient-controlled analgesia (PCA).

Table 4

Observed nurses' knowledge and experience.

Characteristic	Less Experienced (n = 7)	Experienced (n = 4)	Charge Nurses (n = 3)	Total (n = 14)
Nursing experience, years, mean (range)	2.1 (2–3)	8.8 (4–14)	10.3 (5–15)	5.8 (2–15)
Pediatric experience, years, mean (range)	2.1 (2–3)	5.8 (2–11)	10.3 (5–15)	4.9 (2–15)
Unit experience, years, mean (range)	1.7 (1–2)	3.5 (1–6)	9.7 (3–15)	3.9 (1–15)
Age, years, mean (range)	25.6 (23–30)	37.8 (26–60)	44.7 (31–57)	33 (23–60)
Entry degree	2 ADN 5 BSN	3 ADN 1 BSN	1 ADN 2 BSN	6 ADN 8 BSN
Current degree	2 ADN 5 BSN	2 ADN 2 BSN	3 BSN	4 ADN 10 BSN
Number of nurses worked or off prior to observation	4 worked 3 off 1–5 days	3 worked 1 off 3 days	1 worked 2 off 3–9 days	8 worked 6 off 1–9 days

ADN, associate degree in nursing; BSN, Bachelor of Science in Nursing.

this is worse than her belly surgery," stated the mother of a 15-year-old whose pain after laparoscopic cholecystectomy was reportedly not as well controlled as her pain after posterior spinal fusion or appendicovesicostomy.

Social/cultural dimension: 6 influential humanistic themes

Patient age: Most nurses used standardized, developmentally appropriate, valid, and reliable pain assessment tools consistent with the hospital's policy (Wong-Baker Faces scale for children 3–7 years of age and a 0–10 numeric rating scale [NRS] for older children). However, younger patients, 0–6 years of age, usually cried to alert nurses of their pain (Table 5). Older patients were able to self-report their pain intensity, but nurses relied on parents and grandmothers to provide supplementary assessments of patients' self-reports of pain and patients' pain behaviors.

Communicating pain expectations: Six nurses were told in shift report about patients' and parents' pain management expectations and inconsistencies with nurses' expectations of pain behaviors. Nurses discussed these concerns face-to-face after formal shift report. These patients were labeled by nurses as having a "low pain tolerance" or were subjected to unique rules. "Mom said, don't tell him he can have the Dilaudid because he will ask for it all the time." Nurses expressed concern about patients' specific requests regarding how to administer intravenous (IV) medications. Nurses negotiated discrepancies with their expectations by making intervention decisions for patients. Seven nurses communicated to 10 patients and their parents that complete pain relief was unrealistic. Four of these patients had pain that was not controlled.

Table 5

Patients' characteristics.

Characteristic	Post-surgical n = 46	Medical or Trauma n = 19	Total n = 65
Gender (n)			
Male	18 (39%)	9 (47%)	27 (42%)
Female	28 (61%)	10 (53%)	35 (58%)
Age, years			
Mean (range)	7.7 years (2 weeks to 24 years)	7.9 years (1 month to 17 years)	7.8 years (2 weeks to 24 years)
<3 years (n)	19	6	25
3–7 years (n)	4	5	9
>7 years (n)	23	8	31
Ethnicity/Race (n)			
White	32 (70%)	10 (53%)	42 (65%)
Black	10 (22%)	4 (21%)	14 (21%)
Hispanic	4 (8%)	5 (26%)	9 (14%)
Days hospitalized, days, mean (range)	3 (0–22)	5.5 (0–29)	3.7 (0–29)
Post-surgical day (n)			
0	11		
1	14		
2	4		
3	7		
4–12	10		

Assessment timing: Most nurses completed their initial patient assessments by 08:00; but 3 nurses did not begin their initial assessment until after 08:00. Of patients assessed before 08:00, 14% were in pain. 40% of patients initially assessed after 08:00 were in pain. The number of times a patient received a pain medication during the previous shift and the time of the last dose was reported during shift report on all except 6 post-surgical patients.

Pain alert: Nurses were alerted to patients' post-surgical pain during initial patient assessments (10 cases) and routine reassessments (11 cases). Nurses also assessed patients in response to calls for interventions (17 cases). Two of these assessments were also nurses' initial assessments.

Broken promises: Four nurses broke their promises to patients and parents to intervene for 4 patients who were experiencing acute post-operative pain. Despite stating, "I'll bring the medicine when she can have it," "We could try acetaminophen or ibuprofen," "I will bring her morphine as soon as I can give it," nurses never administered these analgesics to their patients.

Negotiating: Ten nurses negotiated the administration of oral analgesics with 17 patients and their parents. Negotiations focused on masking the taste of analgesics. Two nurses rewarded 2 patients for taking the oral analgesics, 1 with a popsicle the other with a gift basket.

Spiritual/religious dimension: 1 influential humanistic themes

After their shifts, all nurses evaluated their pain goals as being at least partially met (Table 6). Only 1 nurse, the nurse who did not have any patients in pain, evaluated her goal "to make sure patients are pain-free," as being achieved.

Technologic/physiological dimension: 6 influential bureaucratic themes

Post-surgical day: Post-surgical patients were hospitalized for an average of 3.26 days (range, 0–22 days) (Table 5). Of 16 post-surgical patients who nurses discharged during their shifts, 10 were less than a day from surgery. Increasing days from surgery correlated with decreasing rates of intervention.

0–10 numeric pain rating scale (NRS): Although there were 23 post-surgical patients >7 years of age, only 12 interventions were provided by 7 nurses following 8 patients' use of the NRS. Most interventions (n = 9) were for NRS scores of 5–9, (M = 7.4). However, a nurse intervened for a patient score of 4 and another nurse intervened for patient scores of 0 and a second patient score of 1. "Our pain team tells us that 4 is comfortable." Interventions did not follow 11 NRS uses by 9 nurses to assess or reassess 10 patients for scores from 0 to 8 (M = 3.2). Only 3 of these patients reported NRS scores of 0.

Validated use of the NRS requires the nurse to state what is being measured and the anchors for the scale; for example, the hospital policy stated nurses should use the following script: "on a scale of 0 to 10 with 0 being no pain and 10 being the worst possible pain, how much pain are you having now?" Nurses only used the 0 to 10 NRS as validated and scripted in the hospital policy twice (Table 7). Some nurses did not state they were asking about pain, most did not define the anchors of the NRS, and some even changed the anchors. Sometimes it was difficult

Table 7
Use of numbers rating scale for pain.

Nurse use of Numeric Rating Scale for Pain	Patient response
Can you give me a number between 1 and 10?	7
Where is your pain level at on a 1 to 10 scale?	8
On a scale of 1 to 10, how achy	Like a 1
On a scale of 0 to 10, 0 being no pain, 10 the worst ever?	0
On a scale of 0 to 10, how is your pain?	It's an 8
What is your pain? On a scale of 0 to 10?	Uh, 1
If 0 is no pain and 10 worst, what is your pain right now	Like a 4
Are you hurting? On a 0 to 20?	0
Before I started this medicine, what was your pain?	It was an 8
Ok, tell me what your pain number is.	It's an 8, 8 ½
How's your pain? Patient responds, "Fine." Nurse repeats, "Fine."	About a 6
What would you rate your pain?	Like a 6
OK bud, how would you rate your pain now?	8 or 9
What's our pain level now?	7
How is your pain now, did that morphine help?	5
How would you say your pain is?	Like a 4 or 5
What would your rate your pain now?	A 6
How is your pain level? Patient responds, "It still hurts." Nurse, "Still an 8?"	Yes
Are you hurting? Patient responds, "No." Nurse, "What's your number?"	Just a 1
What number is it?	2
Are you hurting? Patient responds, "No." Nurse, "On a pain scale?"	It is a 3 or 4
Are you hurting? Patient replies, "No." Nurse, "What number would you give it?"	A 0

Behaviors: Crying was the pain assessment for 12 cases. Crying patients were 2 weeks to 6 years of age, including 4 of the 5 post-surgical patients <1 year of age. Seven patients were crying during their initial shift assessment, and nurses were alerted by the sound of crying while still outside patients' rooms. Additional behaviors that led nurses to intervene were whining, kicking, and screaming. Nurses asked mothers and grandmothers to clarify the meaning of patients' cries and to supplement their assessments of pain behaviors.

Advanced planning: Ten nurses pre-medicated 12 patients for potential pain. The most common reason for pre-medicating patients was for ambulation and physical therapy; 3 nurses pre-medicated 3 patients for 4 dressing changes. After a nurse gave hydrocodone/acetaminophen immediately before a dressing change, the patient cried throughout the procedure. The nurse had not waited for the onset of analgesia, which would have required more advanced planning. Nurses also used advanced planning by either giving analgesics when the time interval between doses had elapsed or informing parents to ask for the analgesic at that time. Six nurses provided this type of advanced planning to prevent pain 12 times for 8 patients (1–3 doses/patient).

Biobehavioral interventions, analgesic actions, and side effects: In addition to giving analgesics, nurses intervened with a variety of biobehavioral interventions: swaddling, non-nutritive sucking (pacifier), consoling, repositioning, heating pads, and distraction. All patients who were repositioned had orthopedic surgeries; however, repositioning increased these patients' pain. Biobehavioral interventions were usually given when it was not time for the next analgesic dose. All except 3 patients who received biobehavioral interventions also received analgesics.

Acetaminophen limits were a concern during 11 of the 14 observations. A physician assistant (PA) called to change the frequency of ordered hydrocodone/acetaminophen from every 4 to every 6 h to decrease the patient's daily acetaminophen intake. Six patients had both an acetaminophen/opioid combination analgesic and acetaminophen ordered. When an infant had pain just 2 h after receiving acetaminophen, a nurse used biobehavioral interventions. The infant also had an acetaminophen/opioid combination analgesic ordered, but the nurse and co-signing nurse concluded that another acetaminophen-

Actual Achieved?	Pain Management Goals
	Keep patients comfortable, control pain before it gets too high Maintain a level of comfort for my patient Meet patients' expectations Have them after med administration to have them at therapeutic range less than five, under control (<i>This nurse's patients' pain scores after medication administration were a zero or a one.</i>) 1. (<i>First Patient</i>): Get off epidural and tolerate oral pain meds and keep pain below a three or four (<i>This patient's highest pain score was a two</i>) 2. (<i>Second Patient</i>): Keep on top of pain with oral or IV pain meds thought might need IV 'cause not on epidural as long and keep pain less than four because of his developmental delay and changes (<i>This patient never used a numeric or faces scale</i>). 3. (<i>Third Patient</i>): Encourage PO intake Keep them comfortable and meet parents' goals for the little ones. Making sure goes down to comfortable level, you know they say you can't get them to a zero, but the one patient was a zero, so comfortable with activities. Keep my patients as comfortable as possible Since I had patient yesterday, more control with post-surgical patient. There is going to be some pain, but you want it to be controlled and manageable so they can do ADLs. Here we like to keep our pain under a three, but sometimes you can just keep it tolerable, keep them as comfortable as possible, you can't make everyone's pain go away, but you can make them as comfortable as possible My goal is to control pain as best I can and if not working I consult the provider (<i>This nurse did consult a surgeon for one of her patient's pain</i>) Get 'em up and walking, I wouldn't expect (<i>patient</i>) up and running but comfortable 1. (<i>First Patient</i>): Really just to get her pain under control, 'cause it doesn't sound like she had well controlled pain because she may have been over-rating her pain. I don't think if you are an eight you can just lay there, maybe if you are a four. But it is not about my perception of pain and her and my perceptions are different. 2. (<i>Second patient</i>): Make her pain tolerable 3. (<i>Third patient</i>): His pain was tolerable 4. (<i>Fourth patient</i>): Really doesn't complain of pain

Included text are quotes from post-shift interviews. Except text in parenthesis and italics were added for clarify by the author.

To determine what the nurse was asking, "If 0 is no pain, I call this the (*nurse's name*) scale and a 10 would be like those old Tarzan movies. You know what I mean, maybe like a burn. Have you ever had a bad burn?" The patient simply replies, "No"; but did his answer mean he had no pain, or he didn't understand what the nurse was asking or whether he had ever had a burn?

containing analgesic could not be given within 4 h of the previous dose. Nurses warned parents of this challenge when asking them to decide between 2 acetaminophen-containing analgesics.

Printed instructions warned parents to limit acetaminophen use, but some patients were discharged without these instructions. Nine nurses discharged 13 patients on acetaminophen-containing analgesics. Although it had not been ordered, 3 nurses merely recommended ibuprofen instead of acetaminophen.

Analgesic side effects and the potential for analgesic side effects influenced the decisions of 9 nurses' care of 22 patients. The most common side effect nurses negotiated was 17 patients' potential for nausea. Only 4 patients reported nausea; no patients vomited during observations. Nurses also consulted to differentiate pruritis from allergic reactions and asked about alternative analgesics to prevent either reaction. In addition, a nurse decided to trial a patient off morphine due to hypnagogic myoclonus.

Rate of IV push opioids: Some nurses first diluted IV opioid analgesics in the medication room. Nurses administered IV opioids by slow and steady push, intermittent push, or syringe pump. This inconsistency may have led to a patient's request, "push it at hand." Variance in IV push techniques may have also led to a patient's "light-headedness," another patient's "loopiness," and another's "chest tightness."

Economic dimension: 3 influential bureaucratic themes

With 5–6 nurses/shift ($M = 5.7$), 1 of whom was the charge nurse, care was provided at a 1:3 to 1:4 nurse:patient ratio with 14–18 patients at the start ($M = 16.4$) and 10–18 patients at the end of each shift ($M = 14.2$). There were 2 care partners (nursing assistants) for 13 shifts and a unit clerk for 12 shifts. Discharges exceeded admissions for all shifts (Table 3). Most discharges occurred between 10:00–14:00; the latest was at 19:02. Of the 6 nurses who discharged >1 patient, 4 nurses discharged 2 of their patients in the same hour. Admissions arrived after discharges for 8 shifts. Most admissions ($n = 7$) arrived between 15:00–17:00; the earliest was at 7:02 and the latest was at 17:41. Nurses volunteered to go home early during 2 shifts, and observed nurses were then assigned additional patients to keep the nurse:patient ratios consistent. Patients were admitted from the post-anesthesia care unit (PACU, $n = 7$), emergency department ($n = 2$), pediatric intensive care unit ($n = 2$), and directly from physicians' offices ($n = 3$).

Interruptions and delays: Four nurses were interrupted 6 times, for example, to answer phone calls. In addition, 6 nurses were delayed 9 times by waiting in line for computer access or when patients left the unit.

Travel for analgesics: Nurses traveled to the medication room to retrieve analgesics 43 times. Differences in travel times ($M = 34$ s, range 6–80 s) reflected different distances from patients' rooms.

Gathering of liquids and foods for oral analgesic administration: Nurses retrieved liquids and foods to facilitate patients taking oral analgesics 14 times. Differences in travel times ($M = 94$ s, range 22–342 s) reflected different distances from patients' rooms and the kitchen, as well as time to retrieve items like cups and straws.

Political dimension: 7 influential bureaucratic themes

Charge nurses had an important hierarchical role in the pediatric surgical unit's culture. Their role seemed to insulate nurses from care interruptions. Charge nurses checked and verified all orders, notified nurses of new orders, including discharges, assigned new patient admissions, and managed staff workload and communication with physicians and other clinical departments. When in charge, nurses did not provide direct patient care. Care partners obtained vital signs, assisted patients with hygiene, and performed tasks as delegated by nurses and the charge nurse.

Patient handoff: The process for transferring patients to the post-surgical unit required verification of medication orders by a pharmacist, entry into the eMAR and automated medication dispensing system (AMDS), and availability of medications. A challenge in transitioning 2

infants from the PACU was determining whether to intervene for pain or hunger.

Analgesic availability: Pediatric nurses intervened with analgesics 6 times. Six nurses commented in post-shift interviews that having correct analgesics ordered and available facilitated achieving their pain management goals.

Parents' role: All but 5 patients had parents/family with them during observed shifts. The hospital culture celebrates family-centered care and parents' satisfaction. One nurse explained, "Just do whatever her parents want, that's what we do here, isn't it?" When asked what helps nurses meet their pain management goals, 3 nurses mentioned "parents," more specifically "parents who were active in plan of care," and "listen to parents and what they say." Another nurse stated, "It's hard when parents aren't here." Almost all pain assessment and management interventions were with mothers; nurses were equally reliant on grandmothers.

Parents either alerted nurses to their child's pain while the nurse was in the patient's room or by calling to request a pain management intervention. Nurses informed parents on 10 occasions about the next time analgesics could be given and asked parents to call when the child was awake or needed the analgesic. Nurses relied on parents to verify pain assessments, provide supplemental information to clarify patients' pain, especially behavioral indicators of pain, or coach the children to communicate their pain 40 times during study observations.

Of the 58 pain assessment-to-intervention cases, 9 nurses relied on 14 parents to make decisions that resulted in 25 interventions. Nurses asked parents to choose when more than 1 analgesic was ordered and followed through on their decision even when nurses disagreed with the decision. However, when mothers were unsure about intervening they requested nurses' advice and uniformly supported nurses' decisions.

While parents assisted 9 nurses with medication administration for 9 patients, parents of children 2–7 years of age preferred not to administer analgesics. Parents provided or assisted nurses with providing biobehavioral interventions 4 times during study observations. Parents consoled their infants and assisted in repositioning their children after orthopedic surgeries.

Letting the patient decide: Six nurses let 8 patients decide to intervene for their pain 16 times. This included 6 requests for analgesics or biobehavioral interventions by 3 patients who had previous surgeries. Other decisions were precipitated by a patient request, advanced planning, and 4 routine reassessments. The youngest patient asked to decide was 6 years of age.

Patients did not always decide to intervene. Four nurses let 4 patients decide not to intervene on 5 occasions. Three of these patients reported pain of <4 of 10 on the NRS. One nurse then advised, "Don't wait until it hurts too much."

Nurses' decisions: Nurses decided to intervene when pain was not controlled. When care teams were unsure if or why patients were in pain, nurses determined causes and intervened. Nurses' decisions promoted biobehavioral interventions, and nurses encouraged patients to take analgesics despite resistance.

Prompted assessments: Nurses assessed patients in response to calls for analgesics on 6 occasions, but never more than once per patient. Travel to confirm the need for interventions took 12–13 s.

Consultation and teamwork: To assist in making pain management decisions, 8 nurses consulted or were consulted by other nurses and healthcare providers. Nurses usually first consulted a nurse with more experience, but nurses rarely escalated pain management decisions to prescribers. Consultation with PAs and surgeons was usually postponed until prescribers were on the unit. Poor communication between surgeons and PAs hindered patients' post-surgical pain management times during 4 different shifts. In addition, 2 nurses did not generate consults despite their patients' poorly controlled pain. In post-shift interviews, 3 nurses reported that care teams helped them achieve their pain management goals.

Legal dimension: 2 influential bureaucratic themes

In analgesic orders: All but 7 of the 46 post-surgical patients had analgesics ordered, including 3 infants whose ventricular-peritoneal shunts were externalized 2–4 days prior to observations and 4 patients whose surgeries were 5–12 days prior to observations. One nurse consulted a prescriber when a patient was in pain, but all ordered analgesics had been exhausted. Another nurse did not intervene twice because analgesics were not due.

Scheduled and PRN analgesics were ordered for 11 post-surgical patients. Most nurses waited and reassessed patients after giving scheduled analgesics to see if PRN analgesics were needed. Only 1 nurse gave scheduled IV ketorolac and a PRN oral analgesic at the same time.

Witnessing and co-signing: Of 43 PRN analgesic interventions, 40 required a legal witness (wait time $M = 122$ s, range 10–357 s) to verify the amount given and the amount wasted. Policy also required nurses to co-sign for the removal and discard of controlled substances in the EMR and AMDs. Three nurses needed to re-call for a witness when no one responded to their first request.

Discussion

This study sought to bridge the gap of nurses' knowledge of pain management and translation into clinical practice (Avallin et al., 2018; White et al., 2006; Jangland et al., 2018; Twycross, 2007a, 2007b) by describing nurses' negotiation of the bureaucracy of caring to assess and manage children's acute post-surgical pain. This is the first observational study to explore the complexity of interacting influences that promote or deter nurses from achieving optimal acute post-surgical pain management for hospitalized children in United States. This is also the first study to observe nurses during their entire shift, recognizing that nurses' familiarity with their assigned patients and changes in care demands influence pediatric nurses' pain management decisions. Finally, this is the first deductive study using the Theory of Bureaucratic Caring (Ray, 1989) as a framework to investigate clinical nursing practices. Ten themes of influence were categorized to the humanistic dimensions as educational (3), social/cultural (6), and spiritual/religious (1); and 18 themes were categorized to the technologic/physiological (6), economic (3), political (7), and legal (2) bureaucratic dimensions. Observations further defined these dimensions of caring (see Table 2).

Humanistic dimensions

Nurses', parents', patients', and other clinicians' knowledge of pain management should reflect the state of the science and the art of caring (Institute of Medicine (US), Committee on Advancing Pain Research, Care, and Education, 2011). Educational aspects of caring have been described as information, teaching, and educational programs (Ray, 1989). Literature suggests that nurses who are better educated and have more clinical experience are more skilled in making optimal pain management decisions for patients (Manworren & LaPrise, 2021; Naqib et al., 2018; Virkstis et al., 2019; Yin et al., 2015). However, the only nurse characteristic that influenced care was experienced nurses' (>3 years) insistence that patients eat before taking oral opioid-containing analgesics. This practice exposed experienced nurses' knowledge deficits of the mechanism of nausea from opioids.

This is the first study to report this knowledge deficit. Opioid-related nausea is not a local effect; instead, nausea is a central effect from opioid-receptor binding in the fourth ventricle of the brain (Imam et al., 2018; Mallic-Searle & Fillman, 2017). There is no evidence that taking food with oral opioids will "avoid GI upset." Opioid-related nausea and vomiting, whether from oral or IV formulations, should be treated with centrally acting antiemetics, like ondansetron, not food (American Pain Society, 2016).

Nurses, PAs, and pharmacists were observed to have analgesic knowledge deficits. Manworren and LaPrise (2021) identified time to analgesic onset and peak as a knowledge deficit shared by nurses,

physicians, pharmacists, and physical therapists. Twycross (2002, 2008) also identified that despite ranking administration of analgesics highly, nurses did not provide pre-emptive analgesics. Pharmacologic knowledge deficits were again identified in this study, but previously reported exaggerated concerns about addiction and respiratory depression from opioids (Manworren & LaPrise, 2021; Smeland et al., 2018) were not observed or discussed with the researcher, patients, or parents.

Nurses relied on parents' assistance to intervene with oral analgesic administration. On the other hand, parents of the children 2–7 years of age preferred not to administer oral analgesics. This may explain previous reports of parents' resistance to administer analgesics to their young children after discharge home (Ali et al., 2020; Boztepe et al., 2016; Longard et al., 2016; Razdan et al., 2019; Zolghadr et al., 2014). Nurses could facilitate parents' knowledge and confidence with both analgesic administration and biobehavioral interventions by engaging parents in teach-back methods (Brega et al., 2015; Ha Dinh et al., 2016).

Patients' previous pain experiences did hinder pediatric post-surgical pain management. It is well known that acute pain is difficult to control when patients have chronic pain (Brooks & Golianu, 2016; Schneiderhan et al., 2017) or require chronic opioid therapy (Gordon et al., 2016; Stone et al., 2020), but this is the first study to describe the challenges in controlling acute pain in patients who reported well-controlled post-surgical pain after prior surgeries and during previous hospitalizations. Considering that some pain was expected during post-operative recovery by most nurses, parents, and prior research, more research is needed to determine the influence of prior post-surgical pain experiences, pain and pain management expectations, resistance to trying other interventions, or physiological responses to subsequent acute pain experiences (Joergensen et al., 2019).

Although education facilitated pain management, communicating pain expectations was identified as a social/cultural influence that delayed interventions. This may reflect differences in patients', parents', and nurses' expectations for pain relief after surgery or their different definitions of "doing well" (Byrne et al., 2001). Social aspects of care include communication, compassion, concern, involvement, intimacy, love, and empathy in caring (Ray, 1989). Respect and trust in providing care involves adhering to culturally defined standards of moral behavior, but broken promises of pain interventions were observed.

When patients' pain behaviors were inconsistent with nurses' expectations or culturally defined standards, nurses communicated these deviations, and pain went untreated or was undertreated. These social/cultural pain management influences are well documented (Anderson & Reynolds Losin, 2017; Byrne et al., 2001; Herr et al., 2019; Kaminsky et al., 2019; Mueri et al., 2021; Woodgate & Kristjanson, 1996).

Like previous observational studies, nurses communicated that complete pain relief was unrealistic even when this was not requested by patients or parents (Byrne et al., 2001; Woodgate & Kristjanson, 1996). With the current opioid epidemic, scientific literature also seems to stress reduction in opioid prescribing over pain relief (Kelley-Quon et al., 2020; Kumar et al., 2017). Thus, complete pain relief may no longer be a social/culturally accepted goal, even though this study provided evidence that complete pain relief after surgery could be safely achieved.

Spiritual/religious aspects of care include acts of faith, empowerment, creativity, choice, hope, and brotherly love (Ray, 1989). Spiritual/religious aspects of pediatric pain management may include hope for complete pain relief, having faith in surgical recovery, and generating creative solutions to intervene for patients' pains. Nurses negotiated creative ways to get patients to swallow oral analgesics, but these negotiations took time, and therefore hindered care. On the other hand, if these negotiations had been ineffective, the patients would not have benefitted from the oral analgesics they did not swallow.

In this study, only nurses' pain goals were categorized to the spiritual/religious dimension. Nurses were asked about their decision-

making during observations and about their goals after their shifts. This dimension may be inherent to the cognitive work of nursing, and therefore difficult to observe (Battisto et al., 2009; Potter et al., 2005).

Bureaucratic dimensions

Themes of influences categorized as technologic/physiological expanded the bureaucratic dimension from the knowledge and skill to operate and use equipment to maintain physiological functions of the patient (Ray, 1989) to also include patients' physiologic status and interventions that alter physiological functions. Use of valid and developmentally appropriate pain scales empowered children to self-report pain (Herr et al., 2019). Crying was an efficient method of alerting nurses to pain and securing prompt parental biobehavioral responses (Woodgate & Kristjanson, 1996). Nurses were also alerted to patients' pain by parents' requests for analgesia and NRS scores indicating mild to severe pain. Nurses' failure to use appropriate pain assessment tools is well-documented (Andersen et al., 2019; Byrne et al., 2001; Shen et al., 2017; Smeland et al., 2018; Stevens et al., 2012, 2013, 2014; Twycross, 2002, 2007a, 2007b, 2008; Woodgate & Kristjanson, 1996; Yamada, et al., 2017), but this is the first study to show that use of inappropriate pain assessment tools, including of lack of use of validated behavioral tools and inappropriate use of self-assessment tools, did not hinder nurses from intervening to manage children's pain. Parents provided biobehavioral interventions to alter their children's physiological pain (Edmonds & Twycross, 2018; Roth et al., 2021; Vasey et al., 2019). Unlike previous observational studies, nurses also chose biobehavioral strategies to manage children's pain, specifically when analgesics were not due or to supplement analgesics (Twycross, 2002, 2007a, 2007b, 2008; Woodgate & Kristjanson, 1996).

The economic dimension of bureaucratic caring emphasizes workload and staffing and involves the allocation of resources to provide care while maintaining the viability of the system (Ray, 1989). Workload and staffing determine direct care time, and thus influence the cost of care (Twycross & Collis, 2013). There was little variance in staffing during the 14 shift observations; however, interruptions and delays that pulled nurses away from direct patient care hindered their responsiveness to children's acute post-surgical pain (Solomon et al., 2016). Travel time to retrieve analgesics and gather liquids and foods could be reduced by having secured medication storage in patient rooms and delegating stocking of rooms to care partners.

The effectiveness of initial pain management interventions implemented during a nurse's shift influenced the type and timing of subsequent assessments and interventions. The predominant culture of the unit was to complete initial patient assessments promptly. It was unclear why some nurses delayed their initial assessments, but previous shift reports did not seem to influence when nurses assessed patients for pain. This is the first study to report that late initial pain assessments hindered pain management.

Nurses were observed to assess patients and promptly intervene to manage and prevent children's post-surgical pains. Nurses' decisions facilitated caring and demonstrated the decision-making power and role stratification of the political dimension (Potter & Wilson, 2017). Nurses' decisions within their scope of practice strongly influenced pain care.

Nurses relied on parents to alert or confirm children's pain (Edmonds & Twycross, 2018; Kaminsky et al., 2019). Unlike Vasey et al. (2019), it was common for nurses to let parents decide whether to intervene for children's pains, and nurses asked parents to choose when more than 1 analgesic was ordered. In pediatrics, the healthcare decision-making rights of patients, who are legal minors, are the responsibility of parents and legal guardians (Katz et al., 2016; Navin & Wasserman, 2017). Parents access healthcare providers and secure treatments for their children's pains; therefore, parents' pain perceptions, expectations, beliefs, and treatment concerns influence children's pain experiences (Edmonds & Twycross, 2018; Erogan & Celik, 2020; Twycross & Finley, 2013; Vasey et al., 2019). Nurses deferred to the

parents' power over their own clinical judgment and relied on the role stratification, division of labor, and political hierarchy to influence pain care (Ray, 1989). Unfortunately, parents may not have the knowledge to make these decisions, especially if this is their child's first experience with surgical pain (Edmonds & Twycross, 2018; Rosales et al., 2016; Voepel-Lewis et al., 2016).

Patients were also empowered to report pain and request interventions (Herr et al., 2019; Kaminsky et al., 2019). Letting patients decide to intervene facilitated caring. Political norms, however, dictated that pain assessments be confirmed before delivering initial interventions when requested; confirmatory pain assessments were not required for subsequent intervention requests. Assessing pain to confirm intervention requests delayed care.

Teamwork facilitated care, whereas lack of timely consultation with prescribers hindered care. Others have found that consultations with pain management specialists are reserved for patients with acute pain who have longer hospital stays (Czarnecki et al., 2014). There were no pain management team consults during study observations. The types of specialty consultations are often physician-driven (Czarnecki et al., 2019). As previously identified, a lack of communication among the medical staff hindered achievement of pain management goals (Alotaibi et al., 2018; Czarnecki et al., 2014; Czarnecki et al., 2019). This hindrance was further magnified by nurses' resistance to consult prescribers unless they were already on the unit making patient rounds.

Ray (1989) identified legal aspects of care as responsibility, accountability, liability, rights, rules, and guiding principles of behavior. Legal influences include prescriptive authority, accountability for opioid administration, and the potential liability for lack of analgesic orders and inadequate pain management. When analgesics were immediately available, patients were treated, and care was facilitated. The use of systems to witness removal and waste of controlled analgesics require duplication of documentation efforts (Wisner et al., 2019) and delay medication administration, thus hindering care.

It was rare that patients lacked analgesic orders; but critical times that this occurred were during transitions from care units. During patient handoff, consistent and standardized formal shift reports and faxed transition reports facilitate nurses' ability to plan for pain care (Wisner et al., 2019). However, until analgesic orders were verified and available, nurses could not intervene to manage patients' pain. The availability of scheduled and PRN analgesics facilitated nurses' ability to provide care (Drew et al., 2018), although most nurses waited and reassessed patients for pain after giving scheduled analgesics to evaluate if PRN analgesics were needed. Pain may increase hospital length of stay (Alotaibi et al., 2018), but patients with longer post-surgical hospital stays were less likely to have analgesic orders, and therefore were undertreated for pain.

Interplay of care dimensions and implications for future research

Throughout this study, the interplay of humanistic and bureaucratic dimensions influenced care. This interplay is critical for interpreting study findings. The legal influence, "no analgesic orders," and the political influence, "analgesic availability," often went hand-in-hand. Together, these further influenced the economic dimension with "interruptions" and pain care "delays." Behaviors, especially crying, helped alert nurses to patients' distress, but did not increase nurses' responsiveness. Crying was a technologic/physiological influence, but nurses attended to parents' political influence and clarified the meaning of crying with parents before intervening.

The political influence of nurses' and parents' roles and decision-making authority strongly influenced responses to patients' actual and potential physiological changes from painful activities with technologic/physiological strategies, like analgesics and biobehavioral interventions. Based on Ray's descriptions (1989), parental presence was initially categorized in the legal dimension of care. However, nurses stated, and observations confirmed that parental presence facilitated

...by making patients more comfortable and helping patients to better communicate their pain (Vasey et al., 2019). Since political aspects of pain management include power, role stratification, division of labor, decision making, communication patterns, regulatory and payor influences, competition, and distribution of resources within an organization (Ray, 1989), the parents' role was re-categorized as a political influence. Previous studies emphasized the dominance of the political and economic dimensions (Potter & Wilson, 2017; Ray, 1989, 1994; Ray et al., 2002); while the expanded definition of the technologic/physiological dimension and interplay with the political dimension suggest pain management weighs heavily on these dimensions.

High pain scores on the NRS facilitated pain management; however, when nurses used discrete NRS scores to guide their interventions, pain management was hindered. The study site culture and analgesic orders did not restrict nurses to a set pain score at which to intervene (Pasero et al., 2016). The political influence of allowing nurses to decide to maintain pain relief by providing analgesics when due, and to prevent pain through advanced planning, facilitated care. Physicians tended to legally order analgesics PRN, as needed (Drew et al., 2018), and nurses empowered with analgesics prescribed PRN gave them on a scheduled basis to prevent and treat children's post-surgical pain. This is recommended but rarely seen in clinical practice (American Pain Society, 2016; Paice et al., 2005). More commonly, researchers have reported that nurses delay analgesic administration, and may ignore reports of pain because of legal and political influences (Alotaibi et al., 2018; Vasey et al., 2019). Therefore, the political influence of allowing nurses to make decisions consistent with their education and scope of practice was supported over the simple technologic/physiological pain score and legal but restrictive, orders that tie analgesic administration to specific pain scores (Pasero et al., 2016).

Spiritual/religious goals of hope for pain relief may be most influenced by the political and technologic/physiological dimensions, and limited by economic and legal constraints, social/cultural norms, and educational competency (Twycross & Finley, 2013). The inability to observe the spiritual/religious dimension may explain why only 1 influence—nurses' goals—was categorized to this dimension. Unlike Vasey et al.'s (2019) study, nurses' goals for pain management were consistent with the parents' and organization's goals, suggesting alignment with organizational culture. Nurses desired for their patients to be as comfortable as possible, with pain managed and tolerable. For most patients, these goals were achieved; however, the mixed methods used in this study may have biased the results.

Opportunities were observed in which nurses failed to rescue patients from continued pain. The educational influence of nurses' knowledge was identified and has been consistently studied over the past 30 years (Alotaibi et al., 2018; Manworren, 2000; Manworren & LaPrise, 2021; McCaffery et al., 1990; Naqib et al., 2018; Smeland et al., 2018). Translation of nurses' knowledge and organizational structures and processes that influence translation are more difficult to study and have consequently received less attention (Dihle et al., 2006). Timing of the prescriber's patient care rounds was the organizational process that seemed to influence nurses' failure to escalate pain management concerns in this study. This may reflect the organizational culture, the political dimension, and nurses' failure to effectively negotiate this bureaucracy of caring. To understand factors that contribute to the continued suboptimal management of pain, failure to escalate pain management concerns to prescribers and the hierarchical roles of the political dimension of caring require further investigation.

Previous research has suggested that nurses' ability to overcome barriers may influence pain management decisions, implying that nurses' clinical practice may also reflect the political and cultural climate and structure of individual healthcare institutions (Czarnecki et al., 2014; Czarnecki et al., 2019). Movement and anxiety, as well as poor communication among the medical staff, were contributing factors for unrelieved pain, but undertreated and unrelieved pain was rare in this study. Individual patient experiences rather than the organizational

culture may be the most influential reason for suboptimal pain management. Influences categorized in the technologic/physiological and social/cultural dimensions should be the focus of future studies to tease out the influence of organizations and individual patients on the management of post-surgical pain.

Conclusions

The theoretical framework of bureaucratic caring provided a means to explore the complex factors that influence nurses' provision of acute post-surgical pain management in a hospital setting. Nurses were observed acting and reacting to assessments, care plans, interventions, and evaluations. However, nurses' reactions were not the effect of actions, but instead were the result of personal and system interactions of care priorities. The dimensions of bureaucratic caring are complex influences of nursing care. Each dimension presents a potential influence or barrier to achieving the care goal of pain management. Influences categorized to the educational and economic dimensions were similar to Ray's (1989) original descriptions. Ray's work focused on nursing administration and emphasized the economic and political dimensions of the Theory of Bureaucratic Caring; whereas this study focused on clinical practice and further described the political, legal, and social/cultural dimensions. The definition of the technologic/physiological dimension was greatly expanded and influences of the spiritual/religious dimension were notably absent. Each humanistic and bureaucratic dimension of care advanced knowledge of the complexity of providing acute post-surgical pain management in hospital settings. This application of the Theory of Bureaucratic Caring also illustrated the interplay of organizational forces and barriers that influence nurses' abilities to facilitate choice to achieve caring. In this study, the nurses were recognized as negotiators of the bureaucracy of caring who facilitate and modulate care decisions to focus on care goals and outcomes.

Conflicts

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Appendix A. Supplementary data

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