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Pain management communication between parents and nurses after pediatric outpatient surgery

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ABSTRACT

Purpose: The purpose of this study was to explore parent-nurse pain management communication during a child's discharge process following pediatric outpatient surgery.
Design and methods: Thirty-two clinical encounters at discharge between parents ($N = 40$) and nurses ($N = 25$) at BC Children's Hospital were audio recorded and transcribed verbatim. Content analysis was applied on the audio recordings and corresponding transcripts using MAXQDA qualitative research software and Microsoft Excel.
Results: Overall, nurses delivered pain management instructions at an average sixth grade readability level and frequently used communication elements of reassurance, optimism, and question-asking. Less consistent communication elements included open-ended questions, interruptions, and promotion of parental decision-making. Parents most frequently asked one to five questions, with pain medication being the most inquired topic.
Conclusions: Several strengths of the nurse communication approach were identified, and parent questions highlighted a need for greater understanding around pain medication.
Practice implications: These findings will help guide effective pain management communication and care for young patients and their families.

Introduction

The communication process between parents and nurses is an important aspect of a child's hospitalization experience (Fisher & Broome, 2011). For outpatient surgical procedures, the communication during hospital discharge is a critical time for parents or legal guardians (referred to broadly as "parents" hereafter) to understand their child's procedure, ask any clarifications or questions, and receive guidance on how to provide appropriate care for their child at home (Curran et al., 2019; Cutillo et al., 2020; Tam et al., 2020). When done effectively, parent-nurse communication can reduce stress for families in the surgery setting, prepare families for the healing process, and improve adherence to discharge instructions (Curran et al., 2019; Cutillo et al., 2020). Comparatively, poor communication practices can create misunderstandings and put children at risk for adverse health outcomes after discharge (Glick et al., 2017; Pagel et al., 2019).

A key component of post-surgery communication is the delivery of pain management information. Effective pain management at home requires the parent being able to accurately assess their child's pain, provide adequate analgesic dosing, and encourage nonpharmacological strategies for pain relief such as relaxation and distraction (Chorney et al., 2014). How this information is communicated and understood by parents can largely influence pain management practices at home, particularly surrounding the administration of analgesics (Kankkunen et al., 2003; Rony et al., 2010). In some cases, parents may overestimate their child's pain levels and provide substantially more analgesics than prescribed (Kaminsky et al., 2019). On the other hand, several studies have shown that parents often hold misconceptions regarding the utility and safety of analgesics and undertreat their child's pain (Fortier et al., 2011; Rony et al., 2010).

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In terms of receiving and following pain management instructions, parents can face several challenges. Parents have pointed to inconsistent guidance from different clinicians, inadequacy of information, and poor timing to be key communication barriers to understanding pain management information (Kankkunen et al., 2003; Nascimento et al., 2010; Tam et al., 2020). Parents may also face additional barriers to effective pain management such as high levels of stress and anxiety experienced during and immediately after surgery that may prevent them from fully understanding the details of pain management instructions (Scrimin et al., 2009). It is thus critical that pain management communication is clear and informative for parents to effectively manage their child's postoperative pain.

Effective parent-clinician communication is also a foundational component of patient- and family-centred care (Fisher & Broome, 2011). According to Wanzer et al. (2004), patient-centred communication is defined as the array of communicative behaviours that enhance the quality of the relationship between the clinician and the patient, or the patient's family. The use of specific behaviours including clarity, empathy, immediacy, listening, and humour can help improve parent satisfaction and lead to greater adherence and positive health outcomes for the child (Levetown, 2008; Wanzer et al., 2004). Activation strategies such as asking for the parent's understanding, opinion, and interpretation of information can also help facilitate the expression of parents' expectations and preferences, allowing parents to more meaningfully participate in their child's treatment and decision-making (Roter, 2000).

While previous research has explored the qualitative experiences of pain management communication after pediatric surgery (Longard et al., 2016; Robillard et al., 2020; Tam et al., 2020), little is known about the real time communication that occurs between parents and nurses during the discharge process. To address this gap in the literature, we aimed to explore pain management communication using audio recorded clinical encounters of parents and nurses at discharge following pediatric outpatient surgery. By better understanding how parents and nurses engage in pain management communication using real-time recordings rather than relying on recall, we can improve the experience of pain management and postoperative care for young patients and their families.

Methods

Participants

Ethics approval for this study was obtained from the University of British Columbia Children's and Women's Research Ethics Board. The research team met with the Anesthetic Care Unit (ACU) nursing staff at BC Children's Hospital (BCCH) in May 2019 to present details of the study. A presentation was provided by the research team outlining the study's objectives, methods, and followed with the opportunity for nurses to ask questions and collaborate on study logistics. Consent forms were handed out to nurses to review during the presentation and were collected from interested nurses leading up to the clinical encounters. Among approximately 50 nurses who were invited to participate, 25 nurses (50%) agreed to participate in the study and provided written consent to have their delivery of pain management instructions recorded.

Family recruitment for this study was carried out in close collaboration with clinical nurse coordinators at BCCH between June 2019 and August 2019. Parents and children were included if they were fluent in English and if the child was aged 5 to 18, a patient undergoing outpatient surgery and cared for in the ACU, and discharged home on the same day of surgery. Parents and children were excluded from the study if the child was admitted after surgery as pain instructions were provided differently in other units. Parents of children scheduled for any type of outpatient surgery were contacted by a nurse one week before their child's surgery date regarding the details of the study. Forty-six parents who met the inclusion criteria and expressed interest in the research study were initially approached by the research team via email and received study details, consent forms, and assent forms to review. When approached at the hospital before the procedure, a total of 40 parents (87%) and their children (25 boys and 15 girls) agreed to participate in the study and provided written consent and assent respectively to have their clinical encounters recorded. The most common types of surgeries among participants were circumcision, hernia repair, tympanomastoidectomy, and adenoidectomy. A total of 32 clinical encounters between parents and nurses were audio recorded. Eight clinical encounters were not recorded due to unforeseen changes in surgery timing.

Data collection

The research team coordinated with the nursing staff to audio record the communication of pain management instructions in-person between parents and nurses at discharge. This included the verbal communication of the child's surgery, plan of care, and specific pain management instructions delivered by the nurse, as well as any responding questions or clarifications parents may have had. When the nurse was ready, a research assistant (J. M. W. or M. T. T.) entered the recovery room momentarily to turn on the recorder and then left the room to minimize distraction and maintain privacy for the family.

Data analysis

Audio recordings of parent-nurse clinical encounters were transcribed verbatim and any identifying information of participants were removed. Content analysis (Krippendorff, 2019) was conducted to describe the pain management communication between parents and nurses. The research team (J. M. R., J. M. W., and M. T. T.) reviewed 10% ($n = 3$) of the transcripts to develop a preliminary transcript coding guide that captured (1) topics of pain management communication, (2) the nurse communication approach, and (3) the parent communication approach (Table 1). For each code, a definition was developed to assist with consistent coding. Two coders (J. M. W. and M. T. T.) applied the preliminary coding guide to 10% of the sample ($n = 3$). Any discrepancies or disagreements were discussed and resolved through consensus with a third member of the research team (J. M. R.), and the coding guide was further refined through an iterative process. After an inter-rater reliability of at least 85% was achieved, the full sample was split and independently coded by the two coders (J. M. W. and M. T. T.). The qualitative research software program MAXQDA (VERBI GmbH, Berlin, Germany) was used to conduct content analysis of the transcripts. Clinical encounters were also analyzed through the listening of the audio recordings to identify verbal aspects of communication that are better captured through audio such as humour and interruptive speech (Table 1). The same iterative process described for the transcript coding guide was applied for the audio recording analysis. Microsoft Excel was used to conduct content analysis of the audio recordings.

Readability of nurse dialogue was assessed in the transcripts through the Flesch-Kincaid Grade Level (FKG) score and the Flesch Reading Ease (FRE) score using an online readability calculator (https://www.online-utility.org/). FKG scores indicate the level of education a person would need to comprehend a specific text. FRE scores range from 0 to 100 with a higher score corresponding to text that is more easy to comprehend (Flesch, 1948). Consistent with previous work, these scales have been applied for assessing the readability of transcripts of medical dialogue and shown to reflect a distinct measurement of oral literacy (October et al., 2018; D. L. Roter et al., 2007).

The following data will be represented as follows: the number of clinical encounters with the code (n) over the total number of clinical encounters ($N = 32$), percentage (%). Parent and nurse narratives are presented, followed by their identity label (P, parent; N, nurse) and participant number (eg., P7, N12).

Table 1
Transcript coding guide and audio recording analysis.

Transcript coding guide	
Topics of pain management communication	
Topics	Bathing Diet Emergency Logistics Medication Physical activity Surgery information Vomiting/nausea Wound care Other
Nurse communication approach	
Information-giving	First-person recommendation Third-person recommendation General comfort
Socio-emotional communication	Validation of pain management process Validation of parents' understanding Open-ended questions Close-ended questions
Activation strategies	Question to confirm parent understanding Question to gather more information Invitation of parents' judgement
Parent communication approach	
Questions and clarifications	Bathing Diet Emergency Logistics Medication compatibility Medication schedule Physical activity Surgery information Vomiting/nausea Wound care Other
Socio-emotional communication	Social chit-chat related to surgery Social chit-chat not related to surgery
Audio recording analysis	
Duration Humour Outside distraction Interruptive speech # of parent questions (0, 1–5, 6–10, 11–15, 16–20) Unprompted review of instruction	

Results

Topics of pain management instructions

From the transcript analysis, all nurses provided pain management instructions to parents surrounding the child's medication, diet, and vomiting/nausea (32/32, 100%). Other primary topics that were discussed included return to physical activity (31/32, 97%), emergency situations (31/32, 97%), and wound care (30/32, 94%). See Table 2 for a full list of pain management topics covered during the clinical encounters.

Nurse communication approach

Analysis of the nurse communication approach from the transcripts revealed three main themes: (1) information-giving of pain management instructions, (2) socio-emotional communication, and (3) activation strategies.

Information-giving

All nurse-communicated information during the clinical encounters scored an average FRE value of 74.9 (range = 70.2–82.2, "fairly easy" to "easy") and an average FKG value of sixth grade (range = 4-8th grade). When instructing parents on all topics related to pain management (excluding pain medication), most nurses provided their recommendations using a third-person narrative (28/32, 88%) such as "It is recommended" or "They recommend" and less frequently with a first-person narrative such as "I recommend" or "We recommend" (4/32, 13%). However, instructions specifically related to pain medication were mostly delivered using a first-person narrative (27/32, 84%) instead of a third-person narrative (5/32, 16%).

Socio-emotional communication

Reassuring and optimistic statements were frequently used by nurses to validate the pain management process for parents (30/32, 94%), provide general comfort (13/32, 41%), and validate parents' understanding of pain management instructions (11/32, 34%). The following quotes reflect these codes respectively:

> "Some kids have a Subway sandwich on their way home and they're totally fine and happy and they've had lots of procedures before, and there are other kids who don't eat for the whole rest of the day and that's normal too." (N2).

Table 2
Topics of pain management instructions provided at discharge (N = 32).

Topic	n	%	Example
Medication	32	100	"So 6 PM tonight she can have Tylenol and Advil, and you can give both of those." (N2)
Diet	32	100	"And then at 5:30 PM this evening you can go back to a regular diet. Just not high fat and no spicy." (N25)
Vomiting/nausea	32	100	"Nausea and vomiting is common. It can happen. If she does feel sick or vomits a few times at home, you can give her a dose of Gravol." (N17)
Emergency	31	97	"And then you're going to want to contact [doctor] or go to your nearest emergency if his pain is not controlled by the Advil or Tylenol." (N21)
Physical activity	31	97	"So then activity for two weeks, we don't want to have sports, gyms, and rough play for two weeks, and then she can swim and do both of them after two weeks." (N13)
Wound care	30	94	"The sutures are dissolvable, so it'll just dissolve but they do take up to two weeks sometimes to dissolve. So the longer the tape stays on, it kind of just protects that incision. Sometimes it gets a bit itchy so just encourage her not to scratch it." (N1)
Surgery information	28	88	"So [child] was here today for [surgery] with [doctor]. This is his weight here." (N11)
Logistics	19	59	"There's a prescription here for you, for drops for her ears. If you want, we can send that to our pharmacy here to process or if you want to take it to your pharmacy." (N15)
Bathing	11	34	"For bathing, so because of the Steri-Strips can open, we only want you to do sponge baths for the next 48 h, so don't submerge the area or whatever else…" (N13)
Other	3	9	"We always encourage him to wear loose underwear and pants." (N3)

"Your daughter should get better every day. Tomorrow might be a very sore day - we have done surgery, right? But after that it should get better every day" (N5), "Let's get you through this as comfortably as we can." (N25).

"Parent: So that's the first 24 hours then? Nurse: Yup, you got it." (N20).

Activation strategies

In almost all clinical encounters (30/32, 94%), nurses facilitated engagement with parents by asking closed-ended questions, questions that generally produce direct and short one-word responses such as "yes" or "no." Open-ended questions, those that typically elicit greater discretion and a more detailed response, were used by nurses in nearly half of the clinical encounters (15/32, 47%). Question-asking was primarily used by nurses to confirm the parents' understanding of pain management instructions (28/32, 88%): "Does that all make sense?" (N39), "Any questions about going home?" (N31), "Do you guys know the signs and symptoms of infection with her incision site?" (N7). Other questions were used to gather more information about the child or family to inform further pain management instructions (25/32, 78%): "How old is she?" (N8), "Do you guys have Tylenol at home?" (N30), "How far is home?" (N38).

When specifically instructing about pain medication, some nurses (8/32, 25%) reminded parents they knew their child best and invited them to use their best judgement or discretion when making decisions: "So from then on it's up to you whether you want to alternate [the medication] or try to keep them on the same schedule." (N30).

Parent communication approach

Analysis of the parent communication approach from the transcripts revealed two major themes: (1) parent questions and clarifications surrounding pain management instructions and (2) socio-emotional communication.

Questions and clarifications

The most common questions and clarifications from parents were about medication (22/32, 69%), particularly regarding scheduling (19/32, 59%) and compatibility (12/32, 41%). The following quotes reflect these codes respectively:

"So today, 4:45PM, say we give her Tylenol. Or maybe after 2 hours, so 6:45PM, we give her Advil. That is possible? Then, 4 hours after that means 8:45PM - we can give her Tylenol again?" (P4).

"Nurse: So 2:30PM you're going to give her the Tylenol and Advil, okay? Parent: Both of them together?" (P1).

Other main questions and clarifications from parents were surrounding logistics (16/32, 50%), wound care (15/32, 47%), and physical activity (15/32, 47%): "Is [the child] going in a wheelchair to our car?" (P10), "So in two weeks we can take all the dressing off? Everything?" (P40), "How about activities? He likes to kick the ball he might not realize" (P19).

Socio-emotional communication

A few parents (6/32, 19%) engaged in social chit-chat with the nurse and discussed previous experiences related to their child's surgery: "He seems to be fine cause he's had - he's been doing this - this is his 7th procedure" (P20), "It's clear. I have nine children and volunteer a lot…" (P5).

Audio recording analysis

Analysis of the audio recordings revealed an average length of 7.84 min (range = 2.78–18.53 min) for parent-nurse clinical encounters. Some clinical encounters (6/32, 19%) faced an outside distraction (e.g., doctor entering the room unexpectedly, outside nurse asking a question) that caused interference with the delivery of pain management instructions from the nurse. Interruptive speech, defined in this study as the premature termination of a parent's statement or thought while the nurse interjects a new focus (Roter & Larson, 2002), occurred rarely (2/32, 6%) in the clinical encounters. Humour, indicated by laughing and joking, was identified in half of the clinical encounters (16/32, 50%).

Clinical encounters captured parents most frequently asking one to five questions (16/32, 50%) followed by six to ten questions (5/32, 16%) and no questions (4/32, 13%). Some parents (5/32, 16%) used methods of repetition and paraphrasing to process and review the pain management instructions. This occurred when the parent reviewed the instructions out loud in the absence of questioning or probing from the nurse.

Discussion

To the best of our knowledge, this is the first study to explore pediatric pain management communication using the audio recordings and corresponding transcripts of parent-nurse clinical encounters. Content analysis of parent-nurse interactions yielded insights about (1) nurse communication when delivering pain management instructions, (2) the frequency and types of questions asked by parents, and (3) the importance of patient-centred communication in achieving effective pain management for young patients and their families.

Several strengths of the nurses' communication approach were highlighted in this study. Contrary to what has been found in previous literature (Phonpruk et al., 2019; Unaka, Statile, Haney, et al., 2017), pain management instructions in this study were classified as "fairly easy" to comprehend and at an average sixth grade reading level based on FRE and FKG scores respectively. These results well align with recommendations for discharge instructions to be easily understandable and meet the threshold of a sixth or seventh reading grade level (Choudhry et al., 2016; Unaka, Statile, Jerardi, et al., 2017). Furthermore, nurses frequently used socio-emotional aspects when communicating with parents including humour, optimism, and reassurance, and we uncovered nearly no interruptions by the nurse when the parent was speaking. Given the stressful timing and environment that can be experienced with post-operative communication (Scrimin et al., 2009; Tam et al., 2020), nurses using easy to understand language and socio-emotional communication may help parents feel more comfortable and prepared to effectively manage their child's pain after surgery.

Nurses in this study frequently asked questions to verify parents' level of understanding with the instructions or to gather more information. As supported in the Theory of Shared Communication (Giambra et al., 2017), asking questions is a foundational component for nurses to understand parent expectations, establish a trusting parent-clinician relationship, and build a mutual understanding of the child's plan of care. Open-ended questions, in particular, follow a patient-centred approach that allows the parent to lead the conversation and respond based on their knowledge, feelings, and understanding (Chen et al., 2020; Hashim, 2017). In the current study, we found that open-ended questions were used less frequently than closed-ended questions (in 47% and 94% of encounters, respectively). Greater use of open-ended questions may allow parents to share in more detail their prior experiences and current understanding with pain management, and consequently help nurses better tailor their pain management instructions to the needs of families. Closed-ended questions; however, may also be an appropriate tool to gather quick and frequent confirmation of parent understanding during brief encounters of information exchange.

Characterizing the benefits and challenges of open-ended versus closed-ended questions is an area for further research in pain management communication.

We also uncovered that nurses mostly used a first-person narrative when delivering instructions related to pain medication in comparison to a third-person narrative used primarily with other topics of pain management. This discrepancy in language may provide insight on the varying urgencies of pain management information and how different topics are communicated by nurses. As found in previous work, utilizing a first-person narrative in medical communication can elicit strong emotions in recipients which, in turn, influences medical knowledge formation (Sassenrath et al., 2017). Although this phenomenon has yet to be explored further in pain management communication, utilizing a first-person narrative may help facilitate parents' perception and understanding of significant topics of pain management such as medication guidance.

Despite the positive elements of communication demonstrated by nurses in this study, not all elements were consistent, and some barriers were identified. We found that only 25% of nurses invited parents to use their best judgement or discretion when making decisions about pain medication. Communication that acknowledges the parent as a primary caregiver and encourages collaboration in the decision-making process has been voiced by parents as an important aspect in creating a comprehensive pain management plan for the child (Tam et al., 2020). Moreover, a recent study revealed that a parent's self-efficacy in managing their child's pain was significantly correlated with their appropriate use of analgesics and pain relief strategies (Yu & Kim, 2021). Taken together, these results support the need to further prioritize parental self-efficacy in pain management communication such as acknowledging and encouraging parents' expertise and decision-making. It is also important to recognize the limitations nurses may face when delivering pain management information such as a busy environment and limited time to deliver discharge instructions, reflected in the average recording duration of 7.84 min. Although only observed occasionally in the present study (19%), interruptions such as the nurse having to respond to another clinician's request while delivering instructions can be a barrier to effective pain management (McDonald & Fedo, 2009). Medical teams should work collaboratively to ensure pain management instructions are delivered without disruption or distraction for the family.

Most parents in this study asked one to five questions during their clinical encounter with the nurse, with pain medication being the most frequent topic. In combination with other studies reporting insufficient analgesic dosing from parents (Alotaibi et al., 2018; Rony et al., 2010; Yu & Kim, 2021), these findings support the need for additional efforts in helping parents understand and appropriately carry out instructions related to pain medication for their child after surgery. In this process, it is important to consider that question-asking by parents may be influenced by a parent's level of health literacy. As low-literacy adults tend to ask fewer questions about medical care than their high-literacy counterparts (Katz et al., 2007), it is even more critical clinicians use strategies that confirm understanding with parents and create a comfortable environment for question-asking.

Implications for practice

The results of this study have important implications for improving pain management communication in pediatric postoperative care. The findings we uncovered through recorded parent-nurse clinical encounters may assist nurses and other clinicians engage in specific patient-centred practices when communicating with families about pain management. Nurses can incorporate strategies such as question-asking, validating the pain management process, and validating parent understanding to help families better understand pain management instructions. Moreover, providing additional resources to support families' understanding of pain medication may be useful given the frequent number of parent questions on this topic.

The findings in this study are being disseminated back to the patient community as well as to nurses and other relevant staff at BCCH. The new knowledge generated in this study will guide the next stage of our work and has informed the development of collaborative workshops with parents, nurses, and hospital staff to improve pain management communication and develop an ongoing evaluation framework. More broadly, we hope publication of the present study will allow our findings to reach a larger audience to guide improvement of pain management communication following pediatric outpatient surgery. Areas of future work may include investigating important non-verbal aspects of pain management communication between parents and nurses we were unable to capture in this study such as body language and facial expressions.

Limitations

We acknowledge the limitations of the present study, starting with our small sample size and single hospital setting that limits the generalizability of our findings. As parents were aware of their clinical encounter being recorded, this may have impacted their level of comfort in asking questions or created pressure for them to respond in a way they felt as socially desirable. The recording component of this study may have also led to participation from nurses who were more confident and experienced in pain management communication. As a result, this may have led to positively skewed results of the pain management communication process. Finally, pain management communication was only captured between parents and nurses as the child was still waking up from surgery at the time of discharge instructions. Consequently, we were unable to capture the important differences a child's age may play in the involvement in their own care.

Conclusions

Overall, the present findings emphasize several strengths of the nurse communication approach when instructing parents on pain management. Our data illustrates nurses' use of clear language, frequent question-asking, and statements of optimism and reassurance to support families with understanding pediatric pain management. However, our study also uncovered communication elements that were less consistent among clinical encounters including encouragement of parental self-efficacy around pain medication and the use of open-ended questions. Combined with pain medication being the most inquired topic from parents, these results support the need for improved communication and direction around analgesics, which includes further efforts in promoting self-efficacy among parents.

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CRediT authorship contribution statement

Julia M. Wu: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft. **Mallorie T. Tam:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Funding acquisition. **Patricia M. Page:** Conceptualization, Methodology, Resources, Writing – review & editing. **Elizabeth A. Lamb:** Conceptualization, Methodology, Resources, Writing – review & editing. **Isabel Jordan:** Conceptualization, Methodology, Writing – review & editing. **Christine T. Chambers:** Conceptualization, Methodology, Writing – review & editing. **Julie M. Robillard:** Conceptualization, Methodology, Formal analysis, Resources, Writing – review & editing, Supervision, Funding acquisition.

Declaration of Competing Interest

None.

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