

2016

Evaluating recall of key safety messages, and attitudes and perceptions of a patient safety initiative at a pediatric hospital

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Recommended Citation

Sriram, Deepika; Cooke, Carol; Vaillancourt, Régis; Villarreal, Gilda; Pouliot, Annie; Labelle, Nanette; and Wrong, Tracy (2016) "Evaluating recall of key safety messages, and attitudes and perceptions of a patient safety initiative at a pediatric hospital," *Patient Experience Journal*: Vol. 3 : Iss. 1 , Article 5.

Available at: <https://pxjournal.org/journal/vol3/iss1/5>

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Cover Page Footnote

Acknowledgements: The authors would like to express their gratitude for the valuable work of the Patient Safety Ambassador volunteers who delivered safety messages to all participants, and many others at the hospital, at the time of the study: Guy Bellemare, Mayada Hassoon, and Rick Patch.

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Evaluating recall of key safety messages, and attitudes and perceptions of a patient safety initiative at a pediatric hospital

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Abstract

Involving inpatients in their safety and well-being is becoming increasingly common. Interventions have been developed to encourage patients to be active in their own safety, but published evaluations are scarce. The Patient Safety Ambassador (PSA) program was developed to increase patient and parent/guardian engagement and knowledge in patient safety. This study aimed to determine recall ability of key safety messages and explore attitudes and perceptions towards the PSA program, hence obtaining feedback for program improvements. Participants were pediatric inpatients and parents of inpatients. Face-to-face semi-structured interviews were conducted. Cued and non-cued recall ability was determined using questions with and without specific cues, while attitudes and perceptions were explored using open-ended questions regarding patient safety. QSR NVivo 10 software was used to analyze interviews for recall ability and major themes. 95% of parents could remember all safety messages with cues, but could only remember one (35%) or two (32.5%) messages without cues. Inpatient participants could remember up to 4 messages with cues, no messages without cues, and, unlike parents, were unable to discuss their attitudes and perceptions towards safety. Five major themes emerged from analysis of interviews with parents: the importance of medication knowledge, parental involvement in care, having trust in healthcare team, asking questions, and advocacy. Use of cues appears beneficial in facilitating recall of safety messages. Parents had varied attitudes and perceptions to safety. Future research can explore methods to engage pediatric inpatients, integrate cues to increase recall, and examine resulting behavioural changes.

Keywords

Patient safety, patient- and family-centered care, patient engagement, perceptions, healthcare quality improvement, qualitative methods

Introduction

The past twenty years have seen an increased recognition of the importance of patient involvement in their own healthcare, particularly with regards to safety interventions.^{1,2,3,4} Patients taking an engaged role in their own care can improve health services, resulting in better care outcomes.^{1,2,Error! Bookmark not defined.,Error! Bookmark not defined.,5} Interventions have been developed to encourage patients to become active in their own safety and health care.^{Error! Bookmark not defined.,Error! Bookmark not defined.,Error! Bookmark not defined.,Error! Bookmark not defined.,6}

Patient involvement in safety is still an emerging field. Even with safety initiatives in place, adverse events continue to occur in 3-17% of inpatients, of which 28-75% of events are preventable.^{Error! Bookmark not defined.} Research in

the effectiveness of safety interventions is limited. Fact sheets are common in safety interventions, and although they increase patient knowledge and participation in self-management strategies,^{Error! Bookmark not defined.,Error! Bookmark not defined.} there is limited research to prove their effectiveness.^{Error! Bookmark not defined.} Determining the attitudes and perceptions of parents and patients towards safety involvement is a crucial but understudied aspect of the development of effective interventions.^{Error! Bookmark not defined.}

Pediatric facilities present a distinct problem with regards to safety due to the unique vulnerabilities of young patients. Young patients tend to be dependent on adults who may or may not be at their bedside to advocate for their care,⁷ have an increased risk for inpatient injuries, have unique susceptibility to infections, and are often too

young to recognize errors and question care being given.^{8,9} Thus, pediatric patients' families should be involved in safety practices, as they are a source of support to a child.⁸ In March 2013, the Children's Hospital of Eastern Ontario (CHEO) developed a Patient Safety Ambassador (PSA) program that uses trained volunteers to deliver information about inpatient safety to patients and their families. The program's main goals are to: increase patient and parent/guardian engagement in care; increase knowledge of five key safety messages; and increase patient and family adherence to the safety recommendations (from herein, the word "parent(s)" will be taken to mean "parent(s)/guardian(s)"). PSA volunteers circulate through inpatient units and deliver five scripted messages to newly admitted patients and their parents using face-to-face dialogue. The PSA volunteer also leaves a fact sheet that summarizes the five key safety messages with the parent. Parents had the option of also receiving a hand wash reminder sign for their children to use to remind their healthcare team to wash their hands.

The five key messages were as follows:

1. Infection control protocols, including:
 - a. Reminding healthcare staff to sanitize hands
 - b. Parent and child sanitizing hands
 - c. Parents/visitors staying at home if feeling ill
 - d. Following isolation protocols
2. Proper medication administration, including:
 - a. Making sure the child keeps their ID bracelet on
 - b. Ensuring healthcare worker checks the ID bracelet before administering medications
3. Prevention of falls from the bed, including:

- a. Parents staying within arm's reach of the child when bed rails are down
 - b. Parents putting bed rails up when leaving the room
4. Utilization of the SPOT (Speed, Proactive, Outreach, Teaching) critical care team as necessary, (if the child's condition worsens, the parents should tell the physician/nurse first, and if still worried should contact the SPOT team)
 5. Speaking up and asking questions, including:
 - a. Parents being a part of the health care team
 - b. Parents speaking up if uncertain about anything
 - c. Parents being knowledgeable of their child's medications.

The objective of this study was to determine both cued and non-cued recall ability of the key safety messages from parents and pediatric inpatients who had received the PSA message and to explore parents' and pediatric inpatients' attitudes and perceptions to patient safety.

Methods

Design

This was a qualitative study that used face-to-face semi-structured interviews with pediatric inpatients and/or their parents. The number of participants was determined based on reaching theme saturation.

Participants

Participants were recruited consecutively from four

Table 1. Interview questions.

Part I: Assessing knowledge of patient safety guidelines	Part II: Exploring parents'/patients' attitudes and perceptions of their role in patient safety
<p>Non-cued question:</p> <ol style="list-style-type: none"> 1. Can you name the 5 safety measures you can apply to increase patient safety? <p>Cued questions:</p> <ol style="list-style-type: none"> 2. What can you do to prevent infection transmission? 3. How can you be sure that you are being administered the right medication? 4. How can you prevent falls from the crib or bed? 5. What can you do if you think that your child's health is in danger and needs attention right away? 6. How can you get involved in your (child's) care? 	<ol style="list-style-type: none"> 1. What does patient safety mean for you and your family? 2. Do you feel that you/your child is at risk in the hospital? Why? 3. What do you feel your role is in regards to your (child's) safety? 4. What information about patient safety that you received seems fairly important to you and why? 5. What information about patient safety seems not important to you and why? 6. Do you feel informed enough regarding patient safety? What else would you like to know? 7. What do you think about the way the information was presented to you by the PSA volunteer? Do you feel you received the information in a timely fashion? 8. Have you received the hand wash reminder sign, and have you used it? How do you feel about using this sign? 9. What do you think about the layout of the fact sheet? Was the information: a) presented in a clear and logical manner; b) helpful; c) accurate; and d) visually appealing?

CHEO inpatient wards from February to July 2014. All participants signed a consent form prior to participation. Included were parents who received a PSA visit 48 hours previously and who could speak and understand English and/or French. Patients aged 11-17 who could speak and understand English and/or French were also asked to participate.

Patients who had known developmental delays, or were too ill, confused, isolated, or sedated to take part were excluded. All participants were notified of their ability to refuse participation or withdraw from the study at any time.

Procedure

Interview questions were open-ended and provided from a script. The questions were created in collaboration between members of the research team and CHEO's Family Forum (Table 1). In Part I, one question was considered "non-cued" and broadly asked for the participant to name all five key safety messages to the best of their ability; five questions were considered "cued", and contained key words to assist the participant in remembering each key messages. Part II contained open-ended questions that were intended to explore the participants' attitudes and perceptions of their role in patient safety.

PSA volunteers left a record of all inpatients and parents they spoke to in the last 48 hours. The researcher used this list to approach individuals in their or their child's assigned patient room. The face-to-face interview was conducted in the patient room, and a tape recorder was used to record all interviews. Although the interviewer only engaged the participants in the interview, other patients and health care workers were sometimes present in the room. Patient discharges prevented conduction of repeat interviews and the return of transcripts for feedback. Demographic information was collected from each participant, including age, gender, number of times admitted previously, and highest level of education (Table 2).

Data collection and analysis

Interviews were recorded and transcribed into Microsoft Office Word 2010. All transcripts were analyzed using QSR NVivo 10 software. Transcripts were analyzed simultaneously to data collection to determine theme saturation. Analysis was performed to determine recall ability of safety messages, and to explore themes related to attitudes and perceptions of the PSA program. To ensure consistency in coding practices and thematic analysis, a single researcher performed the analysis. Participants' identities were kept confidential throughout the study. When reporting data, participants were given a unique numerical code based on the order of their participation in the study.

Table 2. Participant demographic information

Demographic variable		No. of participants (%)	
Age		Parent participants	Inpatient participants
	11-17		4 (100)
	18-24	3 (7.5)	
	25-34	12 (30)	
	35-59	25 (62.5)	
Gender	Female	31 (77.5)	3 (75)
	Male	9 (22.5)	1 (25)
No. times admitted previously	0	20 (50)	1 (25)
	1	12 (30)	2 (50)
	2	3 (7.5)	
	3		1 (25)
	6	1 (2.5)	
	8+	4 (10)	
Level of education	Elementary	1 (2.5)	4 (100)
	High school	9 (22.5)	
	College	13 (32.5)	
	University – undergraduate studies	10 (25)	
	University – higher education	7 (17.5)	
Total no. participants		40 (100)	4 (100)

Table 3. Parents' recall of key safety messages, both with and without cues

Parent knowledge of safety messages	No. of parents (%)
Retention of messages without cues	
No. times each message was remembered	
1. Infection control protocols	39 (97.5)
2. Proper medication administration	13 (32.5)
3. Prevention of falls from the bed	16 (40)
4. Utilization of SPOT team as necessary	5 (12.5)
5. Speaking up and asking questions	4 (10)
No. of messages remembered per participant	
0 messages remembered	3 (7.5)
Only 1 message remembered	14 (35)
Only 2 messages remembered	13 (32.5)
Only 3 messages remembered	9 (22.5)
Only 4 messages remembered	2 (5)
All 5 messages remembered	0 (0)
Retention of messages with cues	
No. times each message was remembered	
1. Infection control protocols	39 (97.5)
2. Proper medication administration	100
3. Prevention of falls from the bed	39 (97.5)
4. Utilization of SPOT team as necessary	100
5. Speaking up and asking questions	100
No. of messages remembered per participant	
0 messages remembered	0
Only 1 message remembered	0
Only 2 messages remembered	0
Only 3 messages remembered	0
Only 4 messages remembered	40 (100)
All 5 messages remembered	38 (95)

N = 40. Note that this table is based on parent responses only.

Ethical considerations

Ethical approval was obtained from the Children’s Hospital of Eastern Ontario Research Ethics Board prior to data collection. All interview questions were reviewed and pilot tested at CHEO’s Family Forum before use.

Results and Discussion

A total of 43 parents were approached, 40 of whom agreed to participate (93% participation rate). Reasons to not participate included emotional distress and lack of interest in the study. Theme saturation for parents was reached after 40 interviews were conducted.

Seventeen inpatients (aged 11-17) were approached, 4 of whom agreed to participate (24% participation rate). Reasons for refusal included lack of interest in the study, feeling too ill or tired, and emotional distress. Some inpatients could not remember receiving a visit from a PSA volunteer and thus did not wish to participate. The total number of participants for this study was 44. Interviews lasted up to 20 minutes. For the purpose of

these analyses, all responses that do not exceed n = 1 were omitted.

In order for a participant response to be considered “remembering”, the participant would have to mention or discuss at least one of the sub-topics of the key message. For instance, with regards to the key message regarding infection prevention and control, the participant would have to discuss any one subtopic, or a combination of subtopics: reminding healthcare staff to sanitize hands; that the parent and child should sanitize their hands; parents/visitors staying at home if feeling ill; and/or following isolation protocols.

Exploring parents recall of key safety messages

Parents exhibited good knowledge of the five key safety messages when cued with specific questions; however, when not cued, recall was low (Table 3). Without cues, the majority of participants could remember only one or two of the key safety messages, but when they were cued 38 parents (95%) could remember all five. Table 3 provides a summary of this information. Without cues, the message

that was remembered most often was infection control protocols (n = 39, 97.5%)

With use of cues, inpatients could name a maximum of four key safety messages (n = 1) and a minimum of one (n = 1). The message recalled most frequently was prevention of falls from the bed (n = 3), while use of SPOT team and speaking up were remembered least frequently (n = 1 and n = 1 respectively). Two inpatients could remember infection control protocols, and another two remembered proper medication administration. When not cued, inpatients were unable to remember any safety messages.

It is interesting to note that the messages that were remembered most frequently by parents parallel the order in which the messages were disseminated. The first three messages disseminated (infection control protocols, proper medication administration, and prevention of falls from the bed) were most likely to be remembered by parents, while the last two messages (use of the SPOT team and speaking up and asking questions) were remembered least often. It appears that the order of messages may have an influence on recall.

Based on the results of non-cued recall of safety messages, future interventions could implement additional methods to promote comprehension and memorability of safety messages. One such example is the teach-back method, which can be used by the PSA volunteer. This is an evidence-based method where the individuals are asked to repeat an educational message in their own words.¹⁰ If applied, the teach-back method could ensure that the individual has both retained and understood the safety message.

Attitudes toward the PSA program

All participants agreed that the PSA volunteer presented the information well. The volunteer was described as being friendly, knowledgeable, thorough, and presenting himself/herself well. Participants felt engaged (n = 2, 5%) and comfortable (n = 2, 5%) with the PSA volunteer. The verbal communication was beneficial, as some individuals stated they would not have read the flyer and understood the information if the volunteer had not approached them (n = 7, 17.5%). Parents discussed the importance of having a verbal dialogue with the PSA volunteer with one of them mentioning:

“It’s very nice because when you speak to somebody face to face, you get to ask them questions, you know, you get to understand better, but just having a piece of paper and reading it you might say okay I’ll read it later. But having someone coming and telling you all the points about it, you know, it’s very helpful.”
(participant 24)

Participants’ opinions on parent fact sheet

The parent fact sheet, entitled *Working together for patient safety*, was received favourably by the majority of participants (n = 42, 95%). Only one individual did not receive the fact sheet, and of those that did receive the sheet (n = 43, 97.7%), only one did not read it. Participants felt that the fact sheet was eye-catching (n = 4, 10%), easy to read (n = 6, 15%) and a good reference (n = 4, 10%). Two parents (5%) stated they liked that it was written in both English and French.

Parents attitudes and perceptions regarding patient safety

Analysis of interview transcripts revealed the emergence of five major themes and multiple minor themes. These themes, summarized in Table 4, emerged only from interviews with parents, as inpatients were unable to discuss attitudes and perceptions of safety. Many of the thematic elements seemed to emerge from discussion of the five key safety messages.

Discussions around safe medication administration predominantly focused on asking proper questions, being aware of the child’s medication schedules, and learning how to safely administer medications to prepare for discharge. Some parents specifically wanted to know more about their child’s medications because they had no background in health or medicine but still wanted to remain informed. One parent specified:

“[I] try to understand the whole situation and every time they give new medication, ask what for, how long and...I always ask because... sometimes I’m ignorant so I have to know and ask what it is.” (participant 10)

Other parents discussed the importance of having an ID bracelet on their child, as it could avoid the risk improper medication administration:

“He has to have his bracelet on him all the time and they had taken it if off so I asked the nurse to put on another one for him. That’s another important thing that [the PSA volunteer] was telling me about, that they need to have his bracelet, when it came to safety one of the questions that you asked at the beginning. Make sure that he has his bracelet on and that the medicines correspond to the information on his bracelet.” (participant 24)

Medication safety has been previously studied in literature. Research by Mohsin-Shaikh et al.⁴ shows that patients wish to be involved in medication safety practices within the hospital, including asking questions about medications and checking with a healthcare worker to ensure the right medication is administered. Error! Bookmark not defined. Participants in the current study noted that they often ask questions to become more knowledgeable about medication safety. This contradicts previous findings that identified barriers to patient involvement, such as not wanting to challenge their healthcare worker or not having enough knowledge to be involved in medication safety. Error! Bookmark not defined. These differences could

Table 4. Major and minor themes from parent interview transcript analysis, organized by frequency

Major theme	No. parents (%)	No. times mentioned (%)	Minor themes	No. parents (%)	No. times mentioned (%)
Parents felt that having knowledge and information regarding their child’s medication(s) helps to increase patient safety	39 (97.5)	75 (100)	Parents felt that asking questions about medication administration would facilitate safety	28 (70)	38 (95)
			Parents match name on medication label to child’s ID bracelet to ensure safe medication administration	26 (65)	36 (90)
			Parents’ feel that knowledge of child’s medication schedule(s) helps keep child safe	8 (20)	11 (27.5)
			Parent learns to safely administer medication as they felt it helped prepare for discharge	4 (10)	4 (10)
			Parents felt that staying informed regarding their child’s care increases the child’s safety	25 (62.5)	28 (70)
			Parents felt that they are a part of their child’s health care team	4 (10)	5 (12.5)
			Parents felt involving their child in their own healthcare facilitates the child’s safety	3 (7.5)	4 (10)
Parents felt that staying involved in their child’s healthcare was a way to keep their child safe	29 (72.5)	40 (100)	Parents felt that they are involved simply by virtue of being their child’s primary caretaker	3 (10)	3 (7.5)
			Parents initiated two-way communication between parent and care team and felt that this increased safety	3 (7.5)	4 (10)
			Parents felt that participating in daily rounds was a way to maintain safety	2 (5)	2 (5)

(Continued on following page)

possibly be due to methodological differences as the current study used qualitative semi-structured interviews and Mohsin-Shaikh et al.⁴ predominantly used quantitative questionnaires.

The majority of parents would frequently discuss the importance of their involvement in their child care in order to ensure their child safety; that is, if the parent is involved in the child’s health and well-being, the child would remain safe. Involvement could fall into two categories: active involvement and passive involvement. For instance, many parents discussed actively seeking

information and asking questions as a method of maintaining their child’s safety:

“Well, we have been very involved. We ask questions to all the doctors, we want to know, you know what procedures are being done and why they’re being done, do they expect outcomes, what’s the benefit. We ask about medication. You know right now we’ve been working with the doctors to adjust her schedules so that she’s getting more rest... So as parents just making sure we’re part of ... the team, and that’s been really good here. They’ve always answered all our questions; they’ve always helped us be a part of decision making with her care so that’s been really, really

Table 4. Major and minor themes from parent interview transcript analysis, organized by frequency (continued)

Major theme	No. parents (%)	No. times mentioned (%)	Minor themes	No. parents (%)	No. times mentioned (%)
Parents felt that asking questions to understand their child's medical situation helped to maintain patient safety	28 (70)	54 (100)	Parents would ask questions regarding care to ensure safety was ongoing	19 (47.5)	25 (62.5)
Parents felt that they trust the healthcare team to reduce risk and thus increase safety within the hospital	22 (55)	28 (70)	Parents ask questions to PSA volunteer to ensure they understand the safety messages	6 (15)	6 (15)
			Parents felt that asking questions to care team on child's behalf would facilitate ongoing safety	3 (7.5)	4 (10)
			Parents noted that the high level of care and technology at the hospital increases overall safety	3 (7.5)	3 (7.5)
			Parents felt that good hygiene and cleanliness within rooms contributes to safety and well-being	2 (5)	2 (5)
			Parents felt that safety treated as a priority within the hospital	2 (5)	2 (5)
Parents felt that advocating on behalf of their child helped to facilitate ongoing patient safety	10 (25)	16 (40)	Parents felt that speaking up on behalf of child is necessary to facilitate the child's safety	5 (12.5)	8 (20)
			Parents felt that teaching the child to be their own advocate would ensure ongoing safety	4 (10)	4 (10)
			Parents felt that being knowledgeable regarding their child's situation, and keeping healthcare team up to date, would keep their child safe	2 (5)	2 (5)

All themes emerged from interviews with parents only. The total number of parents interviewed was 40. HCW = healthcare worker. Note the total number of responses is greater than 40 as participants could mention or discuss more than one theme in their response.

important for us. So I think that's the main thing, just being very involved. We are part of decisions that are made." (participant 11).

Other parents discussed involvement from a passive stance, in that they were involved in their child's care simply by virtue of being parents, and that all parental actions would automatically translate into involvement in their child's care.

Previous studies have found similar minor themes with respect to involvement. Davis et al.⁵ used a fact sheet and

video to impart safety behaviours, and saw adult patient involvement as a notable result. The intervention by Davis et al.⁵ was useful in encouraging adult patients to question their healthcare team's hand washing habits, ask questions, check care practices, and be informed of their condition; these results were also seen with many parents in the current study. Additional studies have also confirmed other minor themes in the current study, such as monitoring types of care given, confirming safe delivery of care, and speaking up regarding issues.^{11,12} Overall,

previous literature is shown to support the validity of our results.

Many participants discussed asking questions as a way to maintain ongoing patient safety and to understand their child's health situation. Parents felt that understanding the situation and gathering information would be in their best interests to keep their child safe. This could include asking questions to the healthcare team for their own benefit, described by one parent:

"Asking a lot of questions, it's all I do, I bug them too much! So I keep on asking questions to doctors, to nurses, residents... sometimes you get maybe a second opinion, so someone tells me something and I ask another person." (participant 18).

Parents also discussed the benefits of asking the PSA volunteer questions as the safety message was being delivered. One parent noticed that:

"It's more personal and if you have questions you can ask right away, and it's more simple. I prefer the human contact...it's better when you speak with someone." (participant 26).

Having trust in the hospital and the healthcare team was discussed as another major theme among parent participants. Many parents believed that the healthcare staff was doing an excellent job of maintaining hygiene and safety standards, which would in turn increase safety and reduce the risk of illness or injury to their child. This included observing the healthcare team following safety protocols, feeling taken care of within the hospital, and the high level of care and technology offered at the hospital. One parent summarized that thought well by saying:

"Everyone has been professional and everyone seemed very knowledgeable. They've been able to provide me with the answers to the question I've had and the way they handle the care. They're always informing me as to what is going on so they haven't given me any reason to doubt what they're doing." (participant 29)

Some parents also noted that health and safety appeared to be a held as a priority within the hospital, which in turn made them feel safe:

"Because [the hospital staff] – we see that they have [child's] health and safety foremost in terms of talk. It's foremost in their mind in the way they approach things. So we don't worry. We're here and we're not concerned." (participant 40)

A final theme that emerged from interviews with parents was advocacy. Parents spoke about advocacy as a tool to facilitate ongoing patient safety. This could include advocating on behalf of the child for safer care or teaching their child to be their own advocate. One participant mentioned:

"Be proactive, and ... be an advocate for their wellbeing. Because it can be annoying, it can feel annoying when you're asking for things but you're asking for them, you're not asking for you. So you have to keep that in mind." (participant 6)

The themes of trusting the healthcare team and advocacy have not been found in previous literature. Reasons for this discrepancy could be due to methodological differences, as the current study uniquely utilized open-ended questions that allowed participants to speak freely. Also, perceptions and attitudes regarding safety roles were specifically explored, which has not been done before. Verbal dialogue from the PSA volunteer may have also encouraged these responses.

Finally, as mentioned previously, inpatient participants (11-17 years old) were unable to discuss their attitudes and perceptions towards the safety messages. These participants would state that they did not know how to answer the questions asked in Part II of the interview, or asked to skip these questions as they felt the questions were confusing. Based on this, it is possible that the language of the questions in Part II was not accessible for pediatric inpatient participants. Future studies of this nature should consider developing an additional set of questions for these participants, in language that is accessible to their age group.

Many healthcare facilities have implemented safety programs, but published evaluations of interventions, like the current study, are scarce. Pinto et al.⁶ found that a safety video was useful in educating adult patients about their condition, and encouraged self-advocacy; similar results were found in the current study, which used face-to-face dialogue and a parent fact sheet. However, participants in Pinto et al.⁶ also discussed negative side effects of the safety intervention, such as making patients frightened about errors, affecting doctor-patient relationships, shifting responsibility onto the patient, and reinforcement of negative stereotypes of the medical profession. Negative effects were not seen in the current study, possibly because Pinto et al.⁶ specifically explored anticipated side effects of the intervention, and the current study did not.

Feedback and recommendations for program modifications

Parents made suggestions for topics to include in future safety messages. Four parents (10%) would like to see more information regarding isolation procedures, including why the patient was placed in isolation, and further enforcement of isolation procedures for patients, visitors, and staff. Two parents (5%) wanted more information regarding fire safety procedures, including locations of fire safety exits, and the evacuation procedure for patients attached to medical equipment. Requests to make the information more accessible were made,

including having information on a magnet in the patient room ($n = 2$, 5%) and having an informational kit already in the room before the patient arrives ($n = 2$, 5%). It would be feasible to implement these suggestions, as they were either a request for additional information or suggestions for a more accessible means of receiving information. The majority of parents ($n = 30$, 75%) had no suggestions or recommendations for program modification.

Approaching parents and inpatients differently

Based on the differences in results between parents and inpatients, these two populations should be approached differently when delivering safety messages. For instance, inpatients appeared disinterested in the safety intervention, as seen by their low participation rate compared with parents (parent participation rate: 93%, inpatient participation rate: 24%). It is possible that the timing of the PSA visit is not optimal for patients, as they may be fatigued, ill, or recovering from a medical procedure during the visit. Implementing educational programs in electronic forms, such as games, have been shown to be effective in teaching pediatric inpatients in an effective and enjoyable manner.¹³ Interactive forms of patient safety education, such as using videos, has also been effective with adult patients,^{Error! Bookmark not defined.,¹⁴} and families of children in pediatric intensive care units.¹⁵ Future research can look into the use of electronic safety programs for pediatric inpatients to both maintain their interest and educate them effectively.

Strengths and limitations of the study

There are several strengths to this study. Our results add new information to the existing literature, as previous research has not studied the effectiveness of face-to-face dialogue for recall, nor is there a focus on attitudes and perceptions towards safety. This study was comprehensive in that it encompassed both these aspects. Pediatric inpatients and their recall ability, perceptions, and attitudes regarding safety were also studied, which has not been found in previous literature. Limitations include the low sample size of inpatient participants, leading to limited generalizations of pediatric patients' attitudes towards patient safety. In addition, the Hawthorne effect may be present, as participants knew their responses would be analyzed and may have modified their responses accordingly. Finally, a single reviewer carried out thematic analysis of interview transcripts, which could have resulted in bias.

Avenues of future research

Important avenues of future research have emerged, such as exploring the best method to integrate cues to encourage recall of safety messages. Studies can also determine the effectiveness of using alternate means of

knowledge dissemination for ill, fatigued, and disinterested pediatric inpatients to encourage comprehension and recall of safety messages. Finally, the project's objective could be expanded in two ways. Firstly, data can be gathered regarding the PSA project's effectiveness in influencing behavioural changes (i.e., improved hand hygiene, increased use of the SPOT team, etc.) by comparing parent/patient actions before and after the PSA visit. Secondly, the project can include interviews with clinical staff to determine if the staff has seen evidence of changes in parent/patient behaviours or attitudes since receiving the PSA message.

Conclusion

The evaluation of the PSA program one year after implementation at CHEO revealed that most parents could explain all five safety messages when cued. When not cued, most parents could only name either one or two of the five messages. Inpatient participants could remember up to four key safety messages when cued, but were unable to remember any messages when not cued. Although inpatient participants were unable to participate in this discussion, parents had diverse perceptions and attitudes towards patient safety, and various themes emerged from analysis of interviews. These themes should be taken into consideration when developing or modifying future safety interventions, as they help to understand the most effective way to reach parents with important safety information. Both parent and inpatient participants were happy with the personal visit by the PSA volunteer, as they could ask specific questions and felt cared for. Some feasible recommendations for fire safety and isolation information, as well as for greater accessibility of information, were made. These results and recommendations can be used to create more effective and comprehensive safety programs and policies. This study is of value to other pediatric hospitals looking to implement similar patient safety programs.

Acknowledgements

The authors would like to express their gratitude for the valuable work of the Patient Safety Ambassador volunteers who delivered safety messages to all participants, and many others at the hospital, at the time of the study: Guy Bellemare, Mayada Hassoon, and Rick Patch.

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