

A Survey of Parental Barriers to Using Pain-Reduction Strategies During Childhood Immunizations

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abstract

Objective: Childhood immunizations represent the most significant source of iatrogenic pain in otherwise healthy children. Consequently, children make correlations between the doctor's office and the anticipated pain from immunizations and these have long-term consequences such as procedural anxiety, needle phobias, and non-compliance with immunization schedules. Clinical guidelines exist for reducing pain during childhood immunizations. Our study analyzed the use of pain reduction strategies and assessed the barriers that parents face in a family practice setting.

Methods: We surveyed parents at academic family practice units at St. Michael's Hospital. A survey was developed based on a literature search and utilizing current pain reduction guidelines.

Results: 62 surveys were recorded and most parents were moderately concerned about their child's pain. A minority of parents had experience with any pain reduction strategies and the major barriers are related to a lack of knowledge and perceptions that pain is a normal part of the immunization experience.

Conclusions: We report multiple barriers that parents face when utilizing pain reduction strategies during immunizations. While knowledge, perceptions about pain, and time represent major barriers, health care providers should take an active role in advocating for children while working together with parents

introduction

Immunizations represent a significant source of pain and anxiety for children, parents, and health care providers.^{1,2} In Ontario, immunizations begin at two months of age³ and continue throughout infancy, childhood, and adolescence. Based on current Ontario guidelines,³ a child will receive at least ten immunizations in his/her first 18 months of life. This represents the most common source of iatrogenic pain for otherwise healthy children. Other provinces, including British Columbia, have similar immunization schedules. Additionally, annual flu vaccinations are recommended for children over six months of age.

Immunizations can be administered by a variety of health care professionals, including nurses, physician assistants, physicians, and pharmacists (flu shots only). Consequently, children often make early correlations between medical clinics and the anticipated pain from vaccinations.⁴ Children often

express their distress by crying, screaming, or flailing, and parents or health care providers must frequently physically restrain them.⁵ These experiences are related to future procedural anxiety, fear of needles, and non-adherence to immunization schedules.⁶ Up to 25% of adults have a fear of needles, and more importantly, most of these fears develop during childhood.⁵

In 2010, a clinical practice guideline for reducing pain during immunizations was published in the Canadian Medical Association Journal (CMAJ).⁶ However, the uptake of these strategies has been suboptimal,² and often, little is done to address a child's pain in clinical settings.^{7,8} Immunizations are integral to the health of children and communities. Reducing pain might improve the acceptance of immunizations and could empower parents to take actions towards this goal. The primary objective of our study is to assess the barriers to pain-reduction strategies in a family practice setting.⁶

methods

Between January 2012 and April 2012, we surveyed parents at two of five academic family practice units at St. Michael's Hospital, Toronto, Ontario. Ethics approval was obtained through the St. Michael's Hospital Research Ethics Board.

The study population consisted of parents with children under 16 years of age who presented at one of the clinics. To meet inclusion criteria, their child had to follow the Ontario immunization schedule.³ Parents who did not speak English or who did not have their child immunized for any reason were excluded.

A survey was developed (Appendix A, **see page 47**) based on a literature review and the 2010 CMAJ clinical practice guidelines. Survey responses were divided into four categories: 1) demographics; 2) parental perceptions about pain; 3) experiences and barriers to using pain-reduction strategies; and 4) education about pain-reduction

strategies. Parents were asked to quantify their concerns about pain based on their child's most recent immunization appointment to minimize recall bias. Four pain reduction strategies were selected from the guidelines^{6,9} based on a parent's ability to administer them independently of health care providers. These include: 1) applying a topical anesthetic; 2) breastfeeding; 3) giving sucrose (sugar water); and 4) coaching older children to take slow, deep breaths during vaccine administration.^{6,9} Parents were asked whether they had any experience with each strategy. If a parent had never tried it, a list of barriers was provided in a checklist. As the final element, we asked parents if they were interested in learning more about pain reduction strategies and about their learning preferences.

results

1. Demographics

Sixty-two parents responded to the survey over the four-month period (Table 1). The majority of participants were female (82%), and most participants had a post-secondary education or greater (81%). The two largest ethnic groups were from North American and Asia. Eight surveys were completed by parents with a child too young for his/her first immunization.

2. Parental Pain Perceptions

Parents reported their perceptions about pain on a five-point scale (Figure 1).

Average parental concern was 2.7 ± 1.0 (moderately concerned). Out of 56 responses, 36 parents (64%) were moderately to very concerned about pain during vaccinations.

For children 24 months or younger, 78% of parents were moderately to very concerned about pain. Parents were also asked to rate their child's level of anxiety from 1 (not anxious) to 5 (very anxious). Their child's perceived anxiety averaged 2.1 (less anxious), and only 11% appeared very anxious about immunizations.

For older children, only 39% of parents were moderately to very concerned about pain. Their child's perceived anxiety averaged 3.3, with 31% of children being very anxious about immunizations.

Eight parents had children too young for vaccinations, but the majority of these parents were still moderately concerned about pain.

Please rate **your** level of concern about **pain** during your child's **most recent** vaccination:

1	2	3	4	5
Not concerned		Moderate	Very concerned	

Figure 1: Sample survey question

Mothers tended to be more concerned about pain, but the difference was not statistically significant ($p=0.47$). There was no significant difference in pain perception based on level of parental education ($p=0.39$).

3. Pain Reduction Strategies and Barriers

We asked parents about four pain-reduction strategies that can be administered independently of health care providers. The survey then asked if parents had ever used these strategies, and if not what barriers they had faced (Table 2).

With regards to barriers, "Never heard of it" and "Doctor never discussed" refers to parents who were not aware of the strategies or have never talked about it with their doctor, respectively. "Time" refers to either the parent or the health care provider not having enough time in the clinic. "Pain is okay" refers to parents who thought pain is an inherent part of the vaccination experience. "Other" includes factors such as comfort with using the strategy, cost, and thinking that the strategy would not work.

Topical Anesthetics

Eighty-seven percent of parents had never tried topical anesthetics. "Never heard of it" and "Doctor never discussed" were the most commonly cited barriers. Cost for the cream was only cited once as a barrier.

Breastfeeding

Twenty mothers (32%) reported that they had tried breastfeeding, while 34 had never tried it. One mother who had tried breastfeeding found it ineffective. "Doctor never discussed it" and "Pain is okay" were the most commonly cited barriers. One mother cited that she would not be comfortable breastfeeding in the clinic.

Sugar Water for Infants <1 Year

No parents had ever given their child sucrose during immunizations. "Never heard of it" and "Doctor never discussed" were the

most commonly cited barriers. Five parents reported that they were not comfortable using this strategy.

Coached Breathing for Children >3 Years

Thirty-six parents had children who were older than three years of age. Of these, 72% had never tried coached breathing, and 22% had tried it. Two parents found this to be an ineffective strategy. "Never heard of it," "Doctor never discussed," and "Time" were the most commonly cited barriers.

Common Barriers to All Strategies

We also grouped the results from each strategy to analyze the barriers from a broader perspective. Again, the two most commonly cited barriers were "Never heard of it" and "Doctor never discussed".

4. Education About Pain-Reduction Strategies

Forty-one (66%) parents expressed interest in education around pain-reduction strategies. Sixteen (26%) parents were not interested. The majority (41% and 23%) of parents wanted to learn about pain-reduction strategies from physicians or other health care providers, respectively. Seventeen percent preferred learning from the media or pamphlets.

discussion

Immunizations are common in primary care settings, and pain is an important issue to address in pediatric populations. Immunizations are an integral part of health promotion, and in recent years, there have been outbreaks of vaccine-preventable illnesses. From 2007 to 2011, there were five outbreaks of measles, a preventable but highly contagious illness. The biggest outbreak in Quebec occurred in 2011, where an outbreak spread from a school to the local

community, reaching a total of 678 cases.¹⁰ In Canada, only Ontario, Manitoba, and New Brunswick have policies that have mandatory school–entry immunization laws.¹⁰

From a health promotion perspective, the Ottawa Charter for Health Promotion serves as a framework to enable individuals to increase control over and improve their health.¹¹ Minimizing pain is an important issue, and providers should advocate and create supportive environments that encourage immunizations. While parents may not vaccinate their children for other reasons, pain is a ubiquitous issue that can be effectively addressed.

The majority of parents in our study were moderately concerned about their child experiencing pain during immunizations. There were no significant differences in pain perceptions based on parental gender or level of education. A study by Kennedy et al.¹² shows that pain was the most important concern with immunizations; however, health care providers did not routinely discuss pain management with parents.¹³ We hope that by educating parents, they will be empowered to make informed decisions about their child's care. When asked about specific pain–reduction strategies, the majority of parents in our study had never tried any of the strategies. Taddio et al. reports that 70% of parents have never been educated about reducing pain,⁵ and our results reflect this. “Never heard of it” and “Doctor never discussed” were the most commonly cited reasons, but these responses overlap and suggest that education and awareness around pain prevention is lacking. Other studies have demonstrated a similar knowledge gap, and “parents do not know that pain management strategies are available and how to implement them.”¹⁴ This represents an important opportunity for health care providers to engage parents in education.

Topical anesthetics, sucrose, and coached breathing were scarcely used among parents, and the major barriers were around knowledge. Though breastfeeding was the most commonly attempted strategy in our study, the majority of mothers had never tried it. One parent stated discomfort with the strategy, and as such, it may not be culturally appropriate or feasible for all mothers. It may be possible for these mothers to use sucrose

Table 1: Parent and Child Demographics

Characteristics	Responses
Average Parent Age, y (± std deviation)	35.4 (±6.4)
Gender of Parent	Male* Female*
Highest Level of Parental Education	≥ Post-secondary^ < Post-secondary^
Average Child Age	26 months
Age Range of Child	1 week to 12.5 years
Female Children**	26 (49%)
Male Children**	27 (51%)

*Missing data for 2 surveys and excluded from calculation

^Missing data for 4 surveys and excluded from calculation

**Missing data for 9 surveys and excluded from calculation

Table 2: Parental Use of Pain-Reduction Strategies

Strategy	Number of parents who have never tried this strategy	Most common barriers
Topical Anesthetics	54 (87%)	1. Never heard of it (41%) 2. Doctor never discussed (22%) 3. Pain is okay (17%)
Breastfeeding	34 (55%)	1. Never heard of it (31%) 2. Doctor never discussed (28%) 3. Pain is okay (13%) 4. Other (13%)
Sugar Water (<1 year)	57 (92%)	1. Never heard of it (41%) 2. Doctor never discussed (31%) 3. Pain is okay (9%) 4. Not comfortable (9%)
Coached Breathing (>3 years)	26* (72%)	1. Never heard of it (25%) 2. Doctor never discussed (25%) 3. Time (25%)

*From the survey, only 36 children were >3 years of age

instead, but as our results indicate, several other barriers exist for sucrose. The majority of parents were unaware that sucrose could soothe their child's pain effectively. Other issues relate to the availability of sucrose in clinics and costs associated with it. Furthermore, several parents were not comfortable with sucrose, and this could be linked to the view that sugar may harm their child's teeth. The next most commonly cited barrier was the perception that pain is a normal part of the immunization process. This may be related to cultural views or attitudes that pain is an inherent part of the process. However, we demonstrated that pain is an important concern for both children and parents, and the evidence shows that

injection–related fears can be conditioned quickly during childhood.¹³ Children more than 24 months of age were reported to be more anxious by their parents, highlighting the importance of intervening to decrease pain. Less commonly cited barriers included cost, comfort with using the strategy, and beliefs that the strategy would not work.

The majority of parents were eager to learn, and they preferred health care providers to educate them. Similar opinions were reported by Kennedy et al.¹² and Taddio et al.,¹⁵ suggesting that all health care providers play a critical role in passing information about pain–reduction to parents. An illustrated guide for parents is available

online¹⁶ and it can be displayed in clinics and distributed online. Another resource has videos and age-specific recommendations¹⁷. However, 26% of parents were not interested in learning about pain reduction strategies. This represents a major barrier, and it is important to raise awareness about the consequences of untreated pain. Given the endorsement of pain-reduction strategies by the Canadian Pediatric Society and the Public Health Agency of Canada, future directions should focus on continued efforts for widespread implementation and parental education. Pain reduction strategies should be worked into a clinic's workflow, and supplies such as sucrose and topical anesthetics should be made available. Lastly, these strategies can also be applied towards other painful procedures such as venipuncture or other minimally invasive procedures.

Limitations

This study has limitations related to our small sample size and the generalizability of our results. Parents were patients of an academic, urban family health unit, so this may limit the generalizability towards paediatric clinics, non-academic clinics, or other models of practice.

Conclusion

Pain is an important issue for all children, but the use of pain-reduction strategies during routine immunizations remains suboptimal.² Many parents have never used

pain-reduction strategies, and they face several barriers such as a lack of knowledge or health care providers not encouraging these strategies. Continued efforts to implement these strategies will help to promote the health of children and communities in the future.

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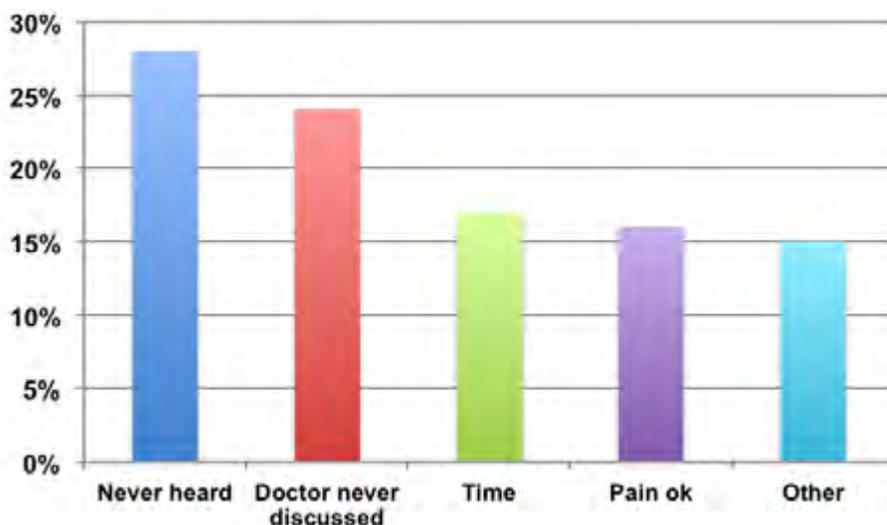


Figure 2: Overall barriers to using pain reduction strategies as a percentage of total survey responses