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Health Education in Health Care Settings

Do Urban Parents' Interests in Safety Topics Match Their Children's Injury Risks?

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Objective: To assess childhood injury risk and parents' injury interests, and the association between the two. *Method:* A cross-sectional computer and telephone survey was conducted as part of a randomized controlled trial. The authors enrolled parents of children being seen at an urban pediatric primary care practice and measured selected injury knowledge, beliefs and safety practices. Parents were asked to select two of four topics of interest and recommendations regarding them were included in a computer-tailored report. *Results:* Participants (N = 105) were assessed as being at risk for all four areas: poisoning (88%), fires (85%), falls (55%), and car crashes (18%). Parents were interested in poisoning (81%) and car crashes (49%); their interests were unrelated to child's assessed risk. *Conclusion:* Soliciting parents' interests prior to counseling may help to identify priority areas for counseling as well as dispel myths and unfounded fears regarding childhood injury risks.

Keywords: injury; pediatrics; anticipatory guidance; computer tailoring; patient education

The burden of injuries is clear. Injuries are the leading cause of death for U.S. citizens between the ages of 1 and 44 years (Centers for Disease Control and Prevention [CDC], 2006). In 2002, 1.8 million people were admitted to hospitals, 33 million were seen in emergency departments, and 82.3 million visited a physician's office for care related to an injury (National Center for Health Statistics [NCHS], 2006). In response, various professional organizations have identified roles for institutions (e.g., trauma centers; Committee on Trauma, 1999), communities (e.g., Injury Free Coalition for Kids; IFCK, 2006), and selected professions (e.g., pediatrics; American Academy of Pediatrics [AAP], 1994). For more than three decades, the AAP has been encour-

aging pediatricians to counsel their patients (parents and children) about injuries. In 1993, Bass et al. conducted a literature review on the effectiveness of pediatric injury prevention counseling. Among those studies that they deemed to meet a minimum standard of scientific rigor, five demonstrated positive results of physician safety counseling, including improved parental safety knowledge, better home safety practices, and increased reported car seat use. In a more recent review, DiGuseppi and Roberts (2000) reported positive associations between pediatric injury prevention counseling and increased motor vehicle restraint use, smoke alarms in the home, and safe hot water temperature. Anticipatory guidance combined with other interventions, such as product distribution and/or financial incentives, has proven even more robust in improving the acquisition and use of safety products to reduce injury risks (DiGuseppi & Roberts, 2000; Gielen et al., 2001).

Three recent trends in medical care have relevance to enhancing injury

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prevention anticipatory guidance: computer technology, the evolving role of the health education specialist, and patient-centered care. The integration of computers into medical care offers the potential to efficiently assess patients' risk for various areas, including injury prevention, and to focus counseling on high-risk behaviors (De Vries & Brug, 1999; Johnson, Serwint, Fagan, Thompson, & Wilson, 2005; Revere & Dunbar, 2001). In addition, computers have the capacity to provide injury prevention information in lieu of or as a supplement to that provided by the health professional (Johnson et al., 2005; McDonald et al., 2005; Nansel et al., 2002). Health educators in clinical settings have been encouraged to "use new technologies to assist with the education of patients, their families and health professionals; and identify new practice strategies" (Crosson & Nakamura, 2000, p. 39). Moreover, newly updated health education competencies are available and define health education responsibilities in assessment, planning, implementation, and evaluation, to name a few (National Commission for Health Education Credentialing [NCHEC], 2006). These responsibility areas clearly overlap with the needs of injury prevention programs. Finally, because families play a critical role in caring for children, it is understandable that most pediatricians espouse family-centered approaches, which have been associated with improved health outcomes and greater satisfaction (Aitken, Mele, & Barrett, 2004; Gross, Zyzanski, Borawski, Cebul, & Stange, 1998; Halfon et al., 2004). The AAP recommends that pediatricians respect parents' "unique" insight into their needs and incorporate family prefer-

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ences into their management plans (Committee on Hospital Care, 2003). This approach may have particular relevance for underserved families who may have more complex social issues and unique needs, such as cost and transportation barriers, to acquiring safety supplies.

Nelson, Wissow, and Cheng's (2003) review of general anticipatory guidance (which includes but is not limited to injury) acknowledges that time constraints limit the amount

of information clinicians give to parents and that different parents have different information needs. Similar to other topics addressed in a medical visit, it is unclear what drives a family's interest in a particular injury topic. Using a family-centered approach to injury prevention counseling, pediatricians or health educators could actively solicit family preferences in determining which injury topics will be discussed during the medical encounter. These pediatric providers might assume that parents are interested in injury topics for which their children are at greatest risk. However, this assumption may be incorrect. Parents' interest may relate to their child's personal risk, their knowledge of the injury's prevalence in their community, or possibly to the media's portrayal of the injury and its consequences. Regardless, it is likely that a parent's interest in a particular injury topic may not be directly related to the actual risk faced by his or her child. To date, no empirical evidence exists to answer this question.

The purposes of this article are to identify the injury topics of interest among a sample of low-income, urban parents attending a pediatric primary care practice and to determine if there is an association between their injury topics of interest and their child's assessed injury risk.

► METHOD

The current study took place from April 2002 to October 2003 as part of a larger randomized controlled trial exploring the feasibility of computer technology to facilitate injury prevention counseling in the pediatric setting and has been described in

detail elsewhere (McDonald et al., 2005). Briefly, we enrolled parents of children between the ages of 6 weeks and 24 months visiting an urban hospital-based academic primary care practice for a health maintenance visit. Intervention group (IG) parents completed informed consent and a computer risk assessment (CRA) about home safety practices and child passenger safety knowledge, beliefs, and behaviors. Four weeks

► ASSOCIATE EDITORS' FOREWORD

This article is the first in a series that will focus on the role of and opportunities for health educators to partner with clinicians, patients, families, and the public to address patient safety and injury prevention. According to a 1999 Institute for Medicine (IOM) Report, *To Err is Human: Building a Safer Health System*, "preventable medical errors would be the eighth most common cause of death in the United States." This IOM report has elevated awareness of patient safety and brought focus and attention at the highest levels that initiatives must be launched to address the root causes of these medical errors and to test and implement interventions to reduce errors and improve the safety of patients. Specifically, their recommendations lay out a four-tiered approach:

- establishing a national focus to create leadership, research, tools, and protocols to enhance the knowledge base about safety
- identifying and learning from errors through immediate and strong mandatory reporting efforts, as well as the encouragement of voluntary efforts, with the aim of making sure the system continues to be made safer for patients
- raising standards and expectations for improvements in safety through the actions of oversight organizations, group purchasers, and professional groups
- creating safety systems inside health care organizations through the implementation of safe practices at the delivery level.

This lead-off article in our series by Eileen McDonald and her colleagues at the Johns Hopkins Bloomberg School of Public Health seeks to enhance the knowledge base about injury prevention and examines the relationship between low-income urban parents' interest in injury prevention topics and the reality of their children's injury risk. Their work identifies a lack of association between parental interest in specific injury prevention topics and their children's actual risk of such injuries. As discussed by the authors, this evidence has clear implications for injury related anticipatory guidance counseling and the importance of bridging clinicians', patients', and their caregivers' concerns.

We welcome contributions from practitioners who have had direct experience designing and implementing patient safety and injury prevention programs and look forward to showcasing innovative health education strategies to improve patient safety and prevent injury.

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later, IG and control group (CG) parents completed a telephone interview. At this time, CG parents completed a telephone risk assessment (TRA), answering the same injury-related questions completed by the IG during the CRA. The Institutional Review Board of the study site approved the current study.

Below is a description of how a child's injury risk was determined for each of the four injury areas included in the assessment, as well as a description of how parents selected their interest in the four topics. Injury risk and topics selected were determined at the computer kiosk for IG parents and via the telephone survey (using the same questions) for CG parents.

- Home fires: To determine injury risk due to house fires, participants were asked, "Do you have a smoke alarm in your house?" Those who indicated *yes* were also asked to describe the number of floors in their home, whether an alarm was present on each level, and whether the batteries had been changed in all smoke alarms in the past 6 months.
- Car crash: To determine risk from motor vehicle injury, participants were asked if they had a car safety seat for their child, how often it was used when the child was a car passenger (rarely or never, some of the time, most of the time, always), which direction the car seat faced (front or rear of car), and where in the vehicle the seat was installed (front or back seat).
- Home falls: To determine risk from falls down stairs, participants were asked how many stairways were inside their home. Participants who reported having

any stairs were asked how they protect their child from going up or down stairs and were offered the following response options: "Use stair gate or close door for all stairways," "use stair gate or close door for some stairways," or "neither of the above." Selections other than *neither of the above* prompted another question, "How often do you use a gate or close the door to stop child from going up or down the stairs?" Response options included rarely or never, some of the time, most of the time, or always.

- Poisoning: To determine injury risk because of unintentional poisoning, participants were asked how and where cleaning supplies and medicines were kept, and whether they had syrup of ipecac in the home.¹ For those who reported having ipecac, an additional question asked how it should be used. Response options included: "I would give it to my child right away," "I would give it to my child if a doctor or poison control center told me to," or "I don't know how to use it."
- Assessed risk: Assessed risk was a dichotomous variable that was determined for each of the four injury topics above. A person was defined as having an "assessed risk" if he or she was not fully compliant with the individual component behaviors within each topic. For example, a participant would be defined as having an assessed risk for home fires if he or she reported something other than having working smoke alarms on all levels of the home and changing the batteries within the past 6 months.

- Selected topics: At the end of the assessment, parents were asked to select two topics of interest and then a personalized and tailored report about these topics was generated for them.

► RESULTS

Participants

Figure 1 illustrates the larger study's design and data sources for the current analysis. The sample included 105 participants who appropriately selected two of the four available topics "to learn more about." Participants who selected 0 topics ($n = 18$) or one, three, or four topics ($n = 3$) were excluded.

Sociodemographic characteristics of parents were compared for IG and CG participants. No statistically significant differences were found between groups in regard to the variables measured at baseline. The average participant could be described as a 26-year-old African American female who completed high school, rents her home, and has more than one child (Table 1).

Injury Topic Selection

Table 2 displays the injury topic selections of participating parents. The majority of parents (81%) used one of their two topic selections to learn more about preventing injuries "due to swallowing a poison." Home fires was the least selected topic.

Assessed Risk

Although topic selection was limited to two, participants' children could be assessed as at risk for all four injury areas. A majority was assessed as at risk for three of the four areas under study (see Table 2).

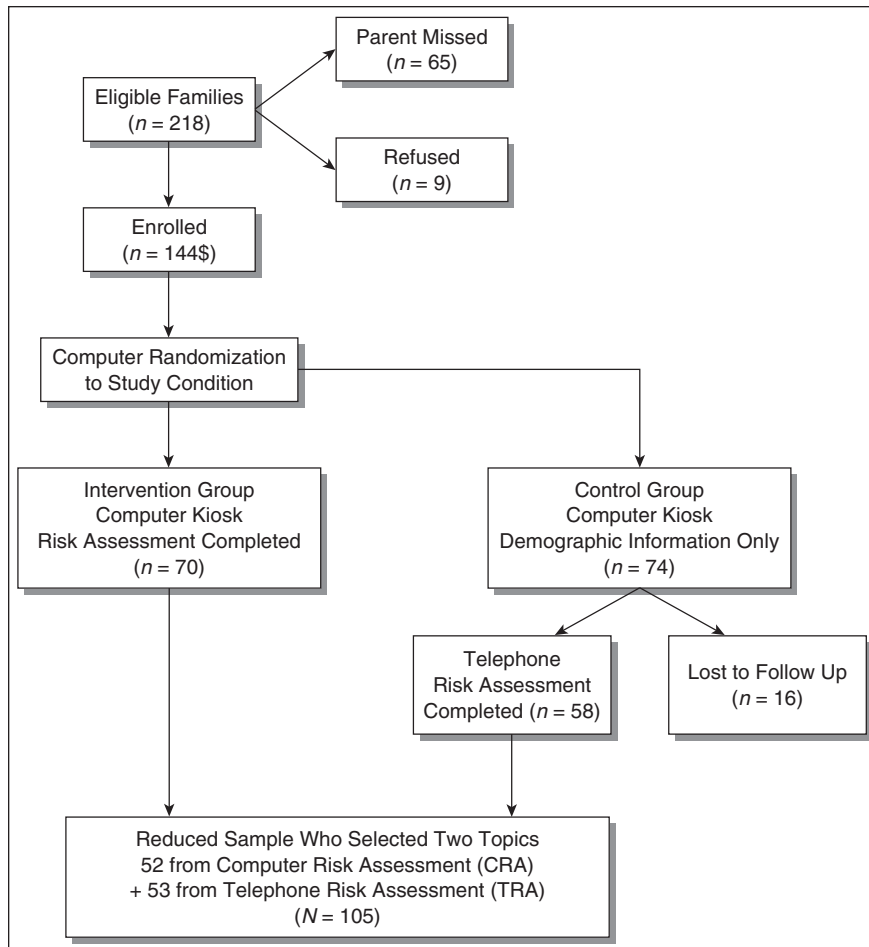


FIGURE 1 Study Design and Data Sources

The highest assessed risk areas were poisoning (88%) and home fires (85%); more than one half of participants' children were assessed as at risk for falls (55%). The relationship between topic selection and assessed risk varied across the four injury areas, with no discernable pattern.

Concordance Between At-Risk Assessment and Injury Topic Selected

Because participants could be at risk for up to four topics but could only select two topics, to analyze concordance, we needed to further reduce the sample to those participants who were at risk for and who selected two topics ($n = 41$). Topic selection is unrelated to risk status, using Spearman's correlation analysis (Table 3). For instance, of the 5 children assessed to be not at risk for poisoning injury, all 5 (100.0%) of their parents selected poisoning as a topic to learn more about. Conversely, of the 11 children assessed to be at risk for fall injuries, only 3 (27%) of their parents chose it as a topic for their report (Spearman .027, $p = .87$). Two participants selected topics that did not match either of their children's assessed risks (data not shown).

TABLE 1
Demographic Characteristics of Sample ($N = 105$)

<i>Sociodemographic Characteristics</i>	<i>Total Percentage</i>
African American	93
Male child	52
Mean age of child at baseline (months)	9.56 (7.36)
Participants who were index child's mother	91
Mean age of mother at baseline (years)	26 (7.61)
Mothers who completed high school	83
Rent home	85
Has other children	76
Two-parent family	51

DISCUSSION AND CONCLUSION

Discussion

To our knowledge, this is the first published study assessing the specific injury interests of urban parents' in preventing childhood injury. Most parents in the current study expressed interest in learning more about poison prevention; however, few expressed an interest in

TABLE 2
Parents' Topic Selections and Children's Assessed Risk for Injury (N = 105)

<i>Injury Areas</i>	<i>Selected Topic n (%)</i>	<i>Assessed as At Risk n (%)</i>
Poisoning	85 (81)	92 (88)
Car crash	51 (49)	19 (18)
Home falls	40 (38)	58 (55)
Home fires	34 (32)	89 (85)

learning about preventing injuries related to house fires. Unfortunately, these interests are not concordant with the needs of young children living in our community (Baltimore City), where house fires are the leading cause of injury death for children ages 0 to 4 years (Center for Injury Research and Policy, 2002), and our previous research found approximately one half of installed smoke alarms were not working (Chen, Gielen, & McDonald, 2003). In contrast, poisoning is the leading cause of injury death for school-aged children in Baltimore (age 5 to 14 years old; Center for Injury Research and Policy, 2002), an age range significantly higher than the ages of our index (study) children. One possible explanation for this finding is that parents may be well informed about

the need for, use of, and availability of smoke alarms to reduce house fire injuries given the substantial public education campaigns conducted by our municipal fire department and others who work on this issue. In comparison, poison prevention strategies may be less well known among low-income parents, thus driving their interest for more information.

Of the smaller sample of parents used to assess concordance, just more than one half (54%) of those assessed to be not at risk for injury from car crashes selected this as a topic of interest. Considering that motor vehicle crashes are the leading cause of injury-related death among U.S. children (CDC, 2006), parent interest in this topic is not surprising. Parents frequently see vivid images of car crashes on the

local news, and their interest in this topic may reflect the media's portrayal of the high burden of injury in this area. In contrast, however, only 33% of those at risk for home fires selected this topic. Again, this may reflect local efforts in this area; however, the news media in our community frequently highlight the high rate of home fires on a seemingly daily basis.

The current study describes a lack of association between low-income urban parents' interests in injury prevention information and their children's injury risks. These findings clearly have implications in the clinical arena in providing family-centered care. Soliciting parents' interest in safety information to direct anticipatory guidance counseling is consistent with family-centered care (Committee on Hospital Care, 2003) and good communication techniques (Gielen et al., 2001). If concordance between risk and interest is poor, one could argue that focusing on parent-selected topics may not allow health care providers or educators to address the true injury risks to the child. Our view, however, is that starting with the parents' interests can be an effective and engaging entrée into providing information

TABLE 3
Frequency and Correlation of Topic Selections by Injury Risk Status (n = 41)

<i>Injury Area</i>	<i>Not at Risk</i>		<i>At Risk</i>		<i>Correlation</i>
	<i>Total Number</i>	<i>Selected Topic n (%)</i>	<i>Total Number</i>	<i>Selected Topic n (%)</i>	
Poisoning	5	5 (100.0)	36	30 (83.3)	Spearman .154, <i>p</i> = .34
Car crash	39	21 (53.8)	2	0 (0)	Spearman .232, <i>p</i> = .14
Home falls	30	9 (30.0)	11	3 (27.3)	Spearman .027, <i>p</i> = .87
Home fires	8	3 (37.5)	33	11 (33.3)	Spearman .035, <i>p</i> = .83

about other priority risk topics. Learning more about why a parent is interested in a particular injury area may allow health care providers and educators to dispel myths and allay parents' unfounded fears. It may also give providers and educators insight into their patients' lives and perhaps discover additional factors placing urban children at greater risk for a particular injury. However, because we did find discordance between assessed risk and interest, our data also support that providers and educators should still assess injury risks and provide appropriate anticipatory guidance.

Poor concordance between risk and interest also has relevance to computer tailoring approaches. For injury prevention messages to be available immediately after a CRA, injury topics must first be identified, specific messages written, and programming completed to create the appropriate report. If parents' interests are not associated with their children's actual risk (as best we can measure it), computer tailored messaging approaches may be of limited utility for reducing actual injury risk. This raises an important question for researchers and program developers in this area: By what yardstick can we preselect injury topics for consideration in an intervention?

Computer tailored risk assessment offers advantages and challenges in the health care setting. The completion of a CRA prior to the medical encounter uses waiting room time effectively and offers the health care provider or patient educator a way to prioritize and personalize counseling messages. However, as an assessment-driven technology, the effectiveness of the CRA is in part dependent on the accuracy,

completeness, and sophistication of the assessment measurements. In addition, risk assessment relies on self-report of the parent, which has its own shortcomings (Chen et al., 2003). Future research is warranted to better understand what drives parents' interests and how to use this information to maximize the effectiveness of computer tailoring and counseling messages delivered by health providers and educators. Interpretation of our findings should be tempered by several study limitations. Inasmuch as we had a small convenience sample, results may not apply to urban populations more generally. Our measures have not been used before, which makes the study innovative, but also raises some limitations as well. We do not claim to have measured actual risk of injury to the child but rather assessed risk based on self-report of indicators that experts agree put children "at risk" for injury. We believe this measurement approach was appropriate, however, because it reflects how anticipatory guidance and other interventions typically operate in a clinical context. We limited parents' topic selection to only two when in reality parents could have had interest in all four topics. However, this is in keeping with recommendations of an expert panel on child safety counseling (Cohen, Runyan, Downs, & Bowling, 1997). Finally, data for intervention participants were collected at a computer kiosk while the CG data were collected via telephone surveys at different times in relationship to their prior pediatric visits, thus potentially leading to systematic differences in responses from both groups. However, we compared the demographic characteristics of the two study groups and found no differences. Because

of the small sample size we were unable to explore differences between groups in topic selection.

Conclusion

Our findings of discordance between area of interest and assessed risk for specific injuries emphasizes the importance of soliciting parents' concerns and assessing their risks when providing anticipatory guidance or educational messages in any health area. Future research should focus on understanding the driving forces and major determinants of parents' interests in specific areas of injury prevention to guide the design of interventions. Additional research is needed to determine the optimal number of safety items to assess and to educate about at any one time.

NOTE

1. At the time of the current study, ipecac was a recommended countermeasure for secondary poison prevention. Since then, the American Academy of Pediatrics has reversed its policy on use of ipecac in the home.

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