Parents as Advocates for Child Pedestrian Injury Prevention: What Do They Believe About the Efficacy of Prevention Strategies and About How to Create Change?

Susan DeFrancesco, Andrea Carlson Gielen, David Bishai, Patricia Mahoney, Shiu Ho, and Bernard Guyer

ABSTRACT

This study describes the support of parents and other community members for child pedestrian safety measures, their willingness to pay in terms of volunteer time and money for efforts to make child pedestrian safety improvements in their neighborhood, and their views on how to affect child pedestrian safety improvements in their communities. In partnership with four city public elementary schools, data were collected through focus groups of parents and other caregivers and through a written survey distributed to parents and caregivers. The findings reveal that parents and caregivers are aware of a full range of prevention measures for the child pedestrian injury problem but are especially supportive of speed bumps, safety education for parents, and better traffic enforcement. Parents and caregivers are uncertain about what kind of strategies would work well to get changes made in their communities to protect child pedestrians. They also reveal that they are willing to get involved in trying to get changes made. Parents and other community members can be willing and effective partners in injury prevention, but they can benefit from receiving more information about the value of environmental prevention measures and from skill-building in injury prevention advocacy.

INTRODUCTION

Many young children in the United States are at risk of being hit by a motor vehicle as they walk or play in their own neighborhoods. Elementary school age children (five to nine years old) are most at risk and are most often struck by a vehicle on residential streets in urban communities during the late afternoon or early evening (Agran, Winn, & Anderson, in press). Children in this age group have not developed the requisite skills needed to cross streets safely. They have trouble localizing sounds, estimating the distance and speed of oncoming traffic, understanding traffic signs, observing traffic (because of their short stature), detecting movement in their peripheral vision, and concentrating on crossing the street to the exclusion of other distractions (Rivara & Roberts, in press). In an urban setting, children are affected also by many environmental conditions which increase their risk of pedestrian injury such as high traffic volumes, fast traffic speed, curb parking, housing density, and a lack of safe play spaces. Living in poverty can also increase risk (Agran, Winn, & Anderson, in press).

To reduce the risk to child pedestrians effectively, educational and enforcement efforts aimed at changing pedestrian and driver behavior must be supplemented by engineering solutions that create a safe environment (Schieber & Vegega, 2002). Providing a safer pedestrian environment is a key prevention strategy especially for children, because it compensates for their un-

Susan DeFrancesco, JD, MPH, Andrea Carlson Gielen, ScD, ScM, David Bishai, MD, PhD, Patricia Mahoney, MA, and Bernard Guyer, MD, MPH are with the Johns Hopkins Bloomberg School of Public Health, 624 N. Broadway, Baltimore, MD 21205. 410-955-2397. E-mail: agielen@jhsph.edu. Shiu Ho, MS is with the National Study Center for Trauma and EMS, University of Maryland, Baltimore.

derdeveloped abilities and their lapses in attentiveness. In addition, providing a pedestrian friendly environment could encourage walking, thereby providing additional health benefits to children (CDC, 2002; Rivara & Roberts, in press).

Engineering solutions that can reduce the risk of child pedestrian injury include: traffic calming strategies such as speed bumps/humps, street narrowing, and partial/full street closures; well-trained adult crossing guards; pedestrian walk signals timed to provide adequate time for children to cross; "no turn on red" intersections; properly maintained sidewalks; removing sight obstructions such as overgrown foliage and parked cars near intersections; and well-designed raised medians (Zeeger, McMahon, & Burden, in press). But implementing environmental modifications as an injury prevention intervention often is made difficult, if not improbable, largely because of lack of adequate funding, lack of political commitment toward pedestrian-friendly environments, and an institutionalized emphasis on maintaining unimpeded traffic flow at the expense of pedestrian needs (Schieber & Vegega, 2002; Mean Streets, 2000). Therefore, for environmental change to occur, affected communities often need to be involved in advocating for safety improvements (Bergman, Gray, Moffat, Simpson, & Rivara, 2002; Roberts, 1995).

Injury prevention professionals also have suggested that committed parents, especially those whose children have suffered an injury, may be quite effective in championing injury prevention interventions (Bergman et al., 2002; McLoughlin & Fennell, 2000). Yet, there have been virtually no empirical studies of parents as advocates for injury prevention. Roberts (1995) conducted a study in New Zealand to determine the willingness of parents to sign a petition calling for child pedestrian safety measures. He found that of the parents studied, 31% signed and returned the petition, although those parents whose children were at lowest risk were those most likely to sign and return it. Parents and other community members' views about prevention measures that should be taken, their willingness to become engaged in injury prevention interventions, and their opinions as to how to create change in their communities are important for public health professionals to learn. As part of a larger study of child pedestrian safety, we had an opportunity to begin to provide this information from a sample of urban families.

With the cooperation of school administrators, teachers, and parents, we undertook a child pedestrian safety needs assessment in four city elementary school neighborhoods that varied by rates of child pedestrian injury and median family income. Both qualitative focus groups and a quantitative survey were used. Aims of this report are to describe parents' support for child pedestrian safety measures; willingness of parents to pay in terms of volunteer time and money for efforts to make child pedestrian safety improvements in their neighborhood; and parents' views on how to affect child pedestrian safety improvements in their communities.

METHODS

Four urban public elementary schools participated in this study during the 1999-2000 and 2000-2001 school years. The school neighborhoods, defined as the boundary within which students must live to attend the school, varied by risk of child pedestrian injury (as determined by police crash data) and median household income (as determined by census data). For comparison purposes, the four school neighborhoods are characterized as (1) lower income/ lower risk; (2) lower income/higher risk; (3) higher income/lower risk; and (4) higher income/ higher risk. The study was approved by the city public school system and the Johns Hopkins Bloomberg School of Public Health's Committee on Human Research.

A focus group of parents and other caregivers was held in each of the four study schools. To recruit participants, flyers were distributed in each classroom and sent home with the students. A total of 35 individuals participated (from five to 11 participants per group), and each session lasted about one and one half hours. Two investigators attended each focus group; one served as a facilitator; the other as a note taker. The focus groups were audio taped and participants received $25 for participating. The questions analyzed and discussed below are: What kinds of physical changes are needed in your neighborhood to protect child pedestrians? Have you had experience trying to get physical changes made in your neighborhood? How easy or hard would it be to get physical changes made in your neighborhood (this included a discussion of what would it take to get the changes made)? Would you volunteer your time to participate in efforts to make these changes happen? and Would you pay more in taxes or contribute to fundraising efforts aimed at providing safety measures?

Informed by the data gathered at the parent focus groups, a Steering Committee was formed for the project, and a literature review relevant to child pedestrian safety, and a 50 item written survey was developed for parents and caregivers. Pilot testing and cognitive interview testing were used to refine the instrument. Survey questions were written at the 7th grade reading level or below. In 3/5 of the surveys, parents were asked to choose their youngest child attending the elementary school as the referent child and in 2/5 of the surveys, parents were asked to choose their oldest child.

In three of the schools, the surveys were distributed to the entire student body; in the fourth and largest school, the surveys were distributed to a random sample of classes (stratified by grade) representing 45% of the total student population. Classroom teachers asked their students to bring the survey home to their parents or caregivers. Two weeks after the initial distribution of the surveys, a reminder postcard was sent home with all students. Students received a small prize upon returning the survey to the teacher, and parents were mailed a $10 check to thank them for completing the survey. Respondents' names and addresses were collected solely for the

purpose of distributing the $10 incentive and did not appear anywhere on the survey itself. A total population of 1,959 students received the survey for their parents to fill out and return; 788 surveys were returned, and 723 were usable.

The survey items that are analyzed and discussed in this article were derived from the focus groups and asked parents about (1) the efficacy of four injury prevention measures: volunteer crossing guards to help during the time children walk to school, speed bumps on roads where there are a lot of children, teaching parents about traffic safety for children, and better traffic enforcement (such as giving tickets to people who drive over the speed limit); (2) their perceptions about the effectiveness of three strategies for changing unsafe conditions in their neighborhoods: a letter to the mayor with a large number of residents' signatures, inviting neighbors to a community meeting to discuss the problems and solutions; and writing letters to the city council; and (3) their willingness to volunteer time and money for injury prevention measures. For the injury prevention measures and strategies for change, respondents were asked to rate each item as "would work well," "might work," "would not work," or "not needed."

The survey included four questions to ascertain the willingness of parents to volunteer time or donate funds to protect child pedestrians. The method used to ascertain this comes from economic theory and is known as "contingent valuation." It has been reported previously in detail elsewhere (Bishai, Mahoney, DeFrancesco, & Gielen, in press). Here we summarize the method and compare results across the four school neighborhoods. Five different versions of the survey were developed, each version containing a different number of volunteer hours or amount of money being requested for each of the four questions. Therefore, while each respondent was responding to a single randomly assigned amount, a range of amounts was covered in the entire population sampled. The survey questions were: Would you volunteer to be a crossing guard in your neighborhood (range of options was one hour every year to two hours every day)? Would you give money to a fund for speed bumps (range of options was $1-$100)? If they had a babysitter there, would you come to a talk about improving traffic enforcement in your neighborhood (range of options was for one hour, one time to one hour every week for a year)? If they had a babysitter there, would you come to hear a person speak about traffic safety for children (range of options was a half-hour meeting to an all day meeting for two days)? In the analysis presented here, we provide the proportion of the total sample who answered yes to each of the questions (i.e., regardless of the amount requested in the specific version of the survey). Chi-square statistics were used to compare distributions of responses between the higher risk and lower risk samples within the lower and higher income neighborhoods.

RESULTS

Focus Group Participants. The four focus groups had thirty-five participants in total, 3 males and 32 females, all of whom were parents, grandmothers, aunts or uncles of a child attending the participating school.

Survey Sample. One-half of the children reported on by the respondents were male; 79% of the children were 10 years old or younger; 78% of the respondents were mothers; the mean age of respondents was 35.6 years; and the mean years of education was 12.7. None of these variables differed across neighborhoods. Consistent with the selection of schools, family incomes differed: 3.0% and 2.0% of respondents in the two lower income school neighborhoods reported an income of greater than $50,000 compared to 17.3% and 60.4% in the two higher income schools.

Injury Prevention Measures to Prevent Child Pedestrian Injury

Focus group results. In all the focus groups, parents suggested speed bumps and safe places for children to play (playgrounds, camps, recreation centers) as physical changes that were needed in their neighborhood to make it safer for child pedestrians. Three of the four groups suggested more crossing guards, more traffic lights/stop signs, and changing the timing of walk signals to give children adequate time to cross streets safely.

Survey results. Across all school neighborhoods, speed bumps received the highest efficacy rating of all the injury prevention measures offered (63.9% of all parents said it would work well) (Table 1). Fifty percent (50%) or more of the total sample said that *all* the injury prevention measures would work well. In the higher income group, respondents in the higher risk neighborhood were significantly more likely to think that both crossing guards and teaching parents would work well.

Willingness to Pay/Get Involved

Focus group results. In all focus groups, participants agreed that they would volunteer to help with an effort to get changes made to improve the safety of child pedestrians in their neighborhoods. Participants also were asked to relate any experiences they had with attempts to get changes made in their community. In all groups, participants told of efforts to get changes made in their communities, or in other communities in which they had lived, that involved a variety of neighborhood concerns (e.g., efforts to get a traffic light installed, an alley cleared of trash; a street designated one-way; businesses that attracted adult customers to open in the morning after the school children were in school). In many of these stories, the participants expressed frustration with the process for change and emphasized the importance of being persistent, especially when trying to obtain an effective response from local government officials. Focus group participants also offered opinions about the reasons people do not volunteer: they have low self-esteem or other personality traits that prevent them from getting involved; they do not see lasting or immediate results; they are not in the frame of mind to work together; they do not know where to start; they are fearful; they lack time; they lack awareness; they believe someone else will do it; they don't have babysitters; they don't want to help themselves; and they don't see how an issue

Table 1. Parents' Beliefs about the Efficacy of Injury Prevention Measures

Injury Prevention Measure	Lower Income Neighborhoods		Higher Income Neighborhoods		
	Higher Risk n(%)	Lower Risk n(%)	Higher Risk n(%)	Lower Risk n(%)	Total n(%)
Volunteer crossing guards					
Would not work/not needed	18 (10.2)	29 (13.7)	33 (16.0)	45 (39.2)*	125 (17.6)
Might work	53 (29.9)	57 (26.9)	64 (31.1)	32 (27.8)	206 (29.0)
Would work well	106 (59.9)	126 (59.4)	109 (52.9)	38 (33.0)	379 (53.4)
Speed bumps					
Would not work/not needed	26 (14.5)	27 (12.9)	28 (13.5)	17 (14.7)	98 (13.7)
Might work	40 (22.3)	49 (23.4)	39 (18.8)	31 (26.7)	159 (22.4)
Would work well	113 (63.1)	133 (63.6)	140 (67.6)	68 (58.6)	454 (63.9)
Teaching parents					
Would not work/not needed	14 (7.9)	11 (5.2)	17 (8.3)	23 (19.8)*	65 (9.2)
Might work	66 (37.1)	89 (42.0)	84 (41.2)	44 (37.9)	283 (39.9)
Would work well	98 (55.1)	112 (52.8)	103 (50.5)	49 (42.2)	362 (51.0)
Better traffic enforcement					
Would not work/not needed	23 (12.8)	17 (8.1)	21 (10.3)	18 (15.7)	79 (11.1)
Might work	54 (30.2)	80 (37.9)	74 (36.3)	39 (33.9)	247 (34.8)
Would work well	102 (57.0)	114 (54.0)	109 (53.4)	58 (50.4)	383 (54.0)

* $p<.05$ for comparisons within lower income and higher income neighborhoods

personally affects them.

Survey results. Survey results reveal that across all neighborhoods, 67% of respondents were willing to volunteer to be a crossing guard; 83% said that they would donate money for a speed bump; 88% would attend a meeting to discuss traffic enforcement; and 81% responded that they would go to a meeting to hear a person speak about traffic safety for children (Table 2). Within the higher income group, a statistically significant difference was observed between the higher risk and lower risk neighborhoods, with the respondents in the lower-risk neighborhood less likely to volunteer their time to be a crossing guard (54% vs. 73%), attend a meeting about traffic enforcement (76% vs. 90%), and hear a talk about traffic safety for children (64% vs. 84%) (Table 2).

How to Get Changes Made

Focus group results. In all four focus groups, participants thought that it was important for residents to work together and speak in a unified voice and, in all groups, participants believed that the involvement of community organizations would be helpful in getting changes made in their neighborhoods. In three of the four groups, participants included schools and neighborhood businesses as important partners in an effort for change. In two groups, neighborhood churches were included as influential partners. Three of the four groups mentioned a petition as a successful strategy for making community voices heard. Participants in some groups discussed the motivation for getting residents involved in efforts for change. In half of those groups, participants remarked that it would be helpful to emphasize that efforts are being made on behalf of the school children; that if one person starts to get involved, others will follow; and that a consistent meeting place is helpful.

Survey results. The results reveal that no one strategy to effect change was overwhelmingly preferred (Table 3). Across all neighborhoods, 31.7% responded that a letter to the mayor would work well; 23.6% said that a community meeting would work well; and 26.6% said that a letter to the city council would work well. The majority of respondents, across all neighborhoods, believed that each of the strategies might work: 63.3% said that a letter to the mayor might work; 71.0% responded that a community meeting might work; and 68.5% said that a letter to the city council might work. Within income groups, the only statistically significant difference between the lower risk and higher risk neighborhoods occurred among the higher income group with regard to a letter to the city council. Respondents in the higher risk neighborhood were much more likely to believe that a letter to the city council would be effective (33.8% vs. 19.8%) (Table 3).

DISCUSSION

Community members can play an important role in advocating for child pedestrian safety measures. To obtain environmental changes that require funding and challenge the institutional emphasis on motor vehicles, their role can be critical. We learned that parents generally are aware of a full range of solutions encompassing

Table 2. Parents' Willingness to Pay for Injury Prevention Measures

Injury Prevention Measure	Lower Income Neighborhoods		Higher Income Neighborhoods		
	Higher Risk n(%)	Lower Risk n(%)	Higher Risk n(%)	Lower Risk n(%)	Total n(%)
Would be a volunteer crossing guard	122 (69)	147 (69)	150 (73)*	63 (54)*	482 (67)
Would give money for speed bumps	148 (83)	174 (83)	179 (88)	101 (88)	602 (83)
Would attend a meeting to discuss better enforcement	162 (92)	174 (88)	183 (90)*	90 (76)*	622 (88)
Would attend a talk on traffic safety	152 (86)	175 (82)	172 (84)*	75 (64)*	574 (81)

* p<.05 for comparisons within lower income and higher income neighborhoods

Table 3. Parents' Beliefs about the Efficacy of Strategies for Change

Injury Prevention Measure	Lower Income Neighborhoods		Higher Income Neighborhoods		
	Higher Risk n(%)	Lower Risk n(%)	Higher Risk n(%)	Lower Risk n(%)	Total n(%)
Letter to Mayor					
Would not work	6 (3.4)	16 (7.5)	8 (3.9)	6 (5.2)	36 (5.0)
Might work	115 (64.2)	129 (60.8)	128 (62.1)	79 (68.1)	451 (63.3)
Would work well	58 (32.4)	67 (31.6)	70 (34.0)	31 (26.7)	226 (31.7)
Community Meeting					
Would not work	14 (7.8)	12 (5.7)	8 (3.9)	5 (4.3)	39 (5.5)
Might work	129 (72.1)	152 (72.0)	140 (67.6)	85 (73.3)	506 (71.0)
Would work well	36 (20.1)	47 (22.3)	59 (28.5)	26 (22.4)	168 (23.6)
Letter to City Council					
Would not work	5 (2.8)	12 (5.6)	10 (4.8)*	8 (6.9)*	35 (4.9)
Might work	132 (73.7)	146 (68.5)	127 (61.4)	85 (73.3)	490 (68.5)
Would work well	42 (23.5)	55 (25.8)	70 (33.8)	23 (19.8)	190 (26.6)

* p<.05 for comparisons within low income and high income neighborhoods

education, enforcement, and environmental/physical changes. Parents demonstrated a broad perspective on the problem, recognizing that safe play spaces in their neighborhoods could help reduce the pedestrian injury risk to their children. They are also optimistic that solutions can be implemented and are willing to be involved in getting changes made in their communities to protect child pedestrians.

Survey respondents from all four school neighborhoods placed most value on an environmental change - speed bumps - as a protective solution to child pedestrian injury. But, fewer parents believed that teaching parents about traffic safety and better traffic enforcement would not work or were not needed when compared to speed bumps and volunteer crossing guards. Support for speed bumps may, therefore, reflect more the respondents' familiarity with speed bumps as a protective strategy and less their realization of the relatively greater efficacy of environmental changes. Providing more education and information to community members about the efficacy of environmental solutions to child pedestrian injury may be indicated.

It is helpful for school personnel, traffic engineers, safety professionals, and others who are concerned about designing safer pedestrian environments to know about a community's preferences for improvement. Finding that a community supports a particular prevention strategy can be used to influence decision makers. For example,

learning that a community supports speed bumps, when speed bumps are the most familiar injury prevention measure but not the most feasible or appropriate environmental improvement, could indicate that greater communication with the community is needed to avoid unnecessary conflict with decision makers.

Parents in our focus groups offered strategic and practical suggestions about how to get changes made in their communities. Focus group participants, some of whom had experience with trying to get changes made to improve their communities, described their frustration with the difficulties involved in getting local government officials to respond to their requests for change. This was also reflected in survey results. A large majority of parents believing that strategies such as writing a letter to the mayor, attending a community meeting to discuss problems and solutions, and a letter to the city council "might work," with many fewer parents believing that these strategies "would work well." This uncertainty about what can work to create change may indicate a need for training and skill-building among parents and other community members in strategies and tactics that they can use to influence decision makers. Skill-building in advocacy also may benefit those community members who focus group participants identified as not knowing where to start, fearful, and unlikely to get involved because of low self-esteem.

Our survey results, however, revealed that parents were willing to get involved in trying to get changes made in their communities. The vast majority of parents, across all neighborhoods, were willing to contribute money to speed bumps and to attend meetings to discuss traffic enforcement or to learn about traffic safety for children. Fewer parents, but still greater than a majority, were willing to volunteer to be crossing guards.

A limitation on our interpretation of parents' enthusiasm for getting involved in promoting child pedestrian safety is the self selected nature of our sample. Those who chose to respond to the survey may not be representative of the larger population of parents with children in the selected schools and neighborhoods. With that caveat in mind however, we found that by integrating qualitative (focus groups) and quantitative (written survey) research methods, we effectively gathered useful data from parents on the topic of child pedestrian injury prevention. Parents' beliefs about which prevention strategies would work, their willingness to get involved in change, and their opinions about which tactics would be effective in bringing about change reveal an opportunity to provide parents with education and information about the value of environmental prevention strategies and offer them skill-building in advocating for safety improvements. Our results provide evidence that parents and other caregivers can be eager partners in the effort to reduce child pedestrian injury. It is incumbent upon injury prevention and health education professionals to activate and nurture community partners in our efforts to prevent childhood injuries.

ACKNOWLEDGMENT

This research was supported by a grant to the Johns Hopkins Center for Injury Research and Policy from the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Grant #R49CCR302486

The authors wish to acknowledge and thank the participating schools, community advisory board members, and parents for making this work possible.

REFERENCES

Agran, P., Winn, D., & Anderson, C. (in press). Epidemiology of pediatric pedestrian injuries. In Schieber, R.A., Vegega, M.E., eds. (2003, in press). Reducing childhood pedestrian injuries: Proceedings from a multidisciplinary conference. (CD-ROM) Atlanta, GA: Centers for Disease Control and Prevention.

Bergman, A.B., Gray, B., Moffat, J.M., Simpson, E.S., & Rivara, F.P. (2002). Mobilizing for pedestrian safety: An experiment in community action. *Injury Prevention, 8,* 264-267.

Bishai, D., Mahoney, P., DeFrancesco, S., & Gielen, A.C. (in press). How willing are parents to improve pedestrian safety in their community? *Journal of Epidemiology and Community Health.*

CDC (2002). Barriers to Children Walking and Biking to School-United States, 1999. *Morbidity and Mortality Weekly Report, 51*(32), 701-704.

McLoughlin, E., & Fennell, J. (2000). The power of survivor advocacy: Making car trunks escapable. *Injury Prevention*, *6,* 167-170. *Mean streets 2000: Pedestrian safety, health, and federal transportation spending. (2000).* Surface Transportation Policy Project.

Rivara, F.P., & Roberts, I. (in press). Preventing pedestrian injuries to children: Research gaps and an agenda for the future. In Schieber, R.A., Vegega, M.E., eds. (2003, in press). Reducing childhood pedestrian injuries: Proceedings from a multidisciplinary conference. (CD-ROM) Atlanta GA: Centers for Disease Control and Prevention.

Roberts, I. (1995). Who's prepared for advocacy? Another inverse law. *Injury Prevention, 1,*152-154.

Schieber, R.A., & Vegega, M.E. (Eds.). (2002). Reducing childhood pedestrian injuries. *Injury Prevention, 8,* (Suppl.1):i3-i10.

Zeeger, C.V., McMahon, P.J., & Burden, D. (in press). Key engineering barriers to reducing child pedestrian injuries and deaths: Critical next steps. In Schieber, R.A., Vegega, M.E., eds. (2003, in press). Reducing childhood pedestrian injuries: Proceedings from a multidisciplinary conference. Atlanta, GA: Centers for Disease Control and Prevention.