CE 1.0 ANCC Contact Hours

Building a Case for Pediatric Fall Prevention

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ABSTRACT

Falls are the leading cause of traumatic injury and injury-related emergency department visits in the state of Minnesota for children aged 0–14 years. We hypothesize that few of the Minnesota trauma centers and public health departments responsible for injury prevention (IP) efforts in the community are focusing on fall prevention interventions for children. The purpose of this study was to examine the current state of childhood IP interventions in Minnesota, identify potential partners to collectively address pediatric fall prevention, and utilize survey results to lead future IP efforts. An electronic survey was administered to state/American College of Surgeons verified trauma center and county health department staff in Minnesota. We compared opinions related to leading causes of traumatic injury, current IP efforts, data sources used to prioritize IP efforts, barriers to implementing childhood fall prevention interventions, and partnerships among trauma centers and health departments. Completed surveys were analyzed, with 37 responses from trauma centers and 25 from county health departments. On the basis of opinion, 47% of trauma center staff listed falls as the number one cause of traumatic injury to children compared with 25% of health department staff. Eighteen percent of survey respondents report that they have, or are, providing fall prevention programing. Limited resources were listed as the leading barrier. Significant variation exists regarding opinions related to the leading cause of pediatric traumatic injury. The feedback generated from this survey will be shared with Minnesota stakeholders in an effort to encourage collective action toward fall prevention interventions for Minnesota children.

Key Words

Childhood injury, Fall prevention, Injury prevention, Pediatric, Public health, Trauma center

Falls are the leading cause of injury-related hospitalization and emergency department (ED) visits for Minnesota children up to 14 years of age. In 2016, the Minnesota Injury Data Access System (MIDAS) reported that 26,120 children were seen in Minnesota EDs as a result of a fall. These data represent 38% of all (68,260) injury-related pediatric ED visits. That same year, 392 children (31% of all pediatric injury-related hospitalizations) were hospitalized as a result of a fall-related injury (MIDAS, 2016). Nationally, falls injure more children 14 years and younger than any other unintentional injury (Centers for Disease Control and Prevention [CDC], 2016). According to the CDC, approximately 8,000 children are treated in U.S. EDs for fall-related injuries each day. This adds up to almost 2.8 million children each year. Boys are more than 3 times as likely as girls to die from fall-related injuries. Infants are more likely to fall from furniture, baby walkers, and stairs. Toddlers tend to fall from windows and playground equipment, and older children fall more often from playground equipment (Safe Kids Worldwide, n.d.). Despite the high burden of injury attributed to falls, evidence of effective pediatric fall prevention interventions is limited (Hubbard et al., 2015). Even when evidence is available, lack of sufficient detail about how to implement programs may cause barriers when replicating prevention interventions (Mallonee, Fowler, & Istre, 2006).

Trauma centers (TCs) throughout the nation play an important role in providing injury prevention (IP) outreach within the communities they serve. The American College of Surgeons (ACS), the national verifying body for TCs, requires that IP efforts be prioritized on the basis of the top mechanisms of injuries TCs experience in their service area (ACS, 2014). In addition, the ACS requires that TCs collaborate with community partners to reach desired IP outcomes (ACS, 2014). Public health departments (PHDs) also play a critical role in preventing injury and death by promoting and protecting the health of people throughout the United States. Local PHDs have deep, long-standing connections within communities. In Minnesota, PHDs are required to complete a community needs assessment and, in turn, must develop health prevention and promotion priorities based on the direct needs of the community (Minnesota Local Public Health Act of 1987). Similar to TCs, the PHD process involves convening community partners to achieve desired results (Minnesota Local Public Health Act of 1987).

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All authors disclose no conflicts of interest.

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DOI: 10.1097/JTN.0000000000000427

The primary objective of this study was to gain insight into childhood IP interventions conducted by TCs and PHDs throughout Minnesota. Special focus was made to identify pediatric fall prevention interventions while comparing how Minnesota PHDs and TCs use data sources to prioritize IP outreach efforts and recognize barriers to implementing childhood fall prevention interventions while assessing opportunities for partnerships.

METHODS

A 15-question survey, titled "Minnesota Childhood Injury Prevention Survey," was designed by TC pediatric leaders and IP staff at Mayo Clinic's Level 1 Pediatric Trauma Center. To determine the most appropriate method in administering the survey, TC staff engaged key stakeholders within Minnesota PHDs. As a result, the survey was sent to county and city Statewide Health Improvement Partnership (SHIP) coordinators, school health nurses, and family home visiting (FHV) staff. The Minnesota Injury and Violence Director of the Minnesota Department of Health (MDH) supported the study and assisted with dissemination of the survey link via an e-mail invitation to PHD staff.

To reach intended staff within Minnesota TCs, e-mail addresses of trauma program managers were secured from the Minnesota Department of Health Trauma System website (MDH, n.d.). All program managers of Minnesota ACS and state verified TCs were contacted by an e-mail invitation for participation in the study. Minnesota TC IP coordinators were also contacted via e-mail with a survey invitation. The initial survey invitation explained the purpose of the survey, listed which staff should complete the survey, and included a link to the SurveyMonkey questionnaire. Survey participants were provided with the definition of a "traumatic injury" before viewing the survey questions. Two reminder e-mails were sent while the survey was open for a 5-week time frame. Data were collected and preliminary analyzed using a SurveyMonkey tool.

Secondary analysis consisted of univariate analyses comparing survey responses between PHDs and TCs using χ^2 and Fisher's exact tests as appropriate. These analyses were performed using SAS 9.4 software (SAS Institute, Cary, NC), with significance set at $p < .05$.

RESULTS

A total of 92 responses were collected. Thirty-seven TC staff members and 25 PHD staff members were represented. Thirty respondents did not identify the type of organization they work for, or did not complete the survey fully, and thus those responses were subsequently excluded from final analysis (Figure 1). The final study includes data from 62 survey respondents. The findings from the initial analysis using the SurveyMonkey tool found that based on opinion, 47% of TC staff listed falls as the number one cause of traumatic injury to children compared with 25% of health department staff.

Secondary analysis found that almost one fourth (24%) of PHD staff conveyed that they have previously or are currently implementing childhood fall prevention interventions in their service area compared with 14% of TC staff ($p = .037$). Limited resources were found to be the leading barrier reported by both TC (51%) and PHD (44%) staff to be able to implement childhood fall prevention interventions. Twenty-eight percent of PHD staff described "lack of data" as the second leading barrier, whereas 24% of TC staff felt that "lack of partnerships" caused challenges (Table 1).

There are clear differences in the data sources used by TCs and PHDs when planning outreach and policy

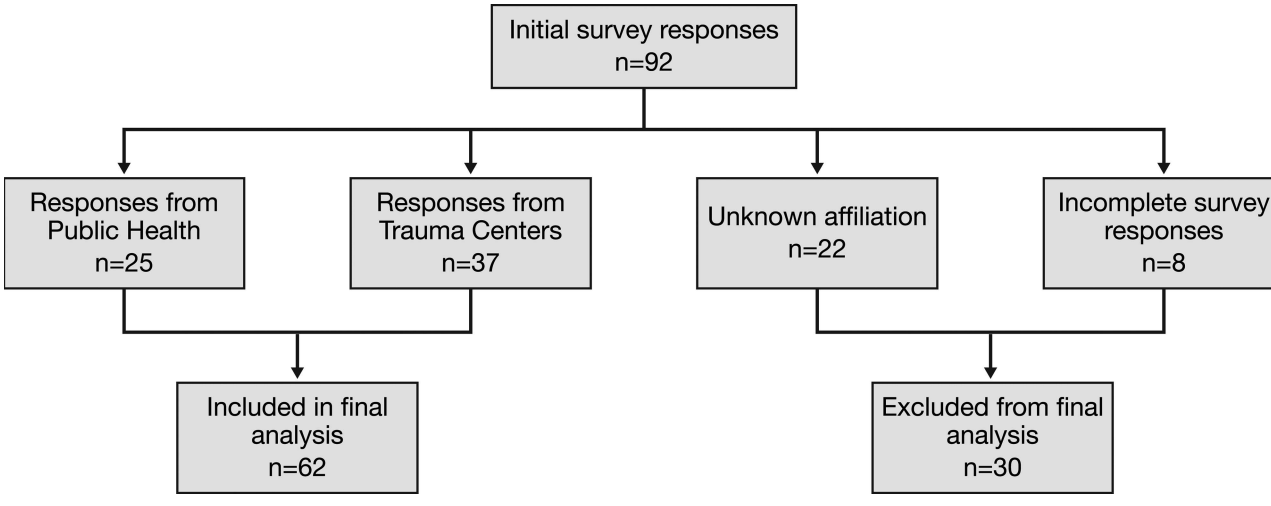

Figure 1. Determination of survey response selection.

TABLE 1 Reported Challenges or Barriers for Implementing Childhood Fall Prevention Interventions

Barriers/Challenges	Trauma Center ($N = 37$)	Public Health Department ($N = 25$)	Total ($N = 62$)	p
Lack of evidence-based programing	8 (22%)	4 (16%)	12 (19%)	.58
Lack of data	8 (22%)	7 (28%)	15 (24%)	.57
Limited resources	19 (51%)	11 (44%)	30 (48%)	.57
Lack of partners	9 (24%)	3 (12%)	12 (19%)	.23
No leadership support	4 (10%)	1 (4%)	5 (8%)	.33
Other: Other job requirements, lack of time, lack of funding	4 (11%)	3 (12%)	7 (11%)	.31

change initiatives (Table 2). These differences in data sources may influence why 54% of TC professionals ranked falls as a leading cause of traumatic injury compared with 20% of PHD staff ($p = .007$). Most PHD and TC staff members did not list MIDAS as a source of data they use to identify, select, and prioritize IP efforts (87% vs. 88%, respectively), even though MIDAS data represent approximately 95% of all hospital treatment for injuries for Minnesota residents.

When asked whether survey respondents had interest in participating in future planning efforts that support the implementation of childhood fall prevention programs or polices, 87% of TC staff stated that they are interested ($n = 13$) or are possibly interested ($n = 19$). Only 48% of PHD staff stated that they are interested ($n = 5$) or possibly interested ($n = 7$) ($p = .005$).

STUDY LIMITATIONS

Nearly 30% of initial survey responses were excluded from the statistical analysis because of incomplete survey responses. Because of the small data set, we cannot conclude that the feedback from this survey is the general opinions of all TC or PHD staff members in the state of Minnesota. Responding to the survey was also voluntary, which may result in selection bias, as those invested in childhood IP may have been more likely to complete the survey than those not vested.

CONCLUSION

Despite the fact that falls are the leading cause of childhood injury-related hospitalization and ED visits, very few TCs and PHDs report that their IP outreach efforts focus on the prevention of pediatric falls. Effective IP

TABLE 2 Data Sources Used to Prioritize Injury Prevention Interventions

Data Sources	Trauma Center ($N = 37$)	Public Health Department ($N = 25$)	Total ($N = 62$)	p
Trauma registry	26 (70%)	1 (4%)	27 (44%)	<.001
Emergency department	25 (68%)	3 (12%)	28 (45%)	<.001
Hospital inpatient discharge	3 (8%)	2 (8%)	5 (8%)	1.00
Death records	5 (14%)	2 (8%)	7 (11%)	.69
Community Health Needs Assessment	13 (35.1%)	22 (88%)	35 (57%)	<.001
Minnesota Student Survey	1 (3%)	15 (60%)	16 (26%)	<.001
Youth Risk Behavior Survey	1 (3%)	8 (32%)	9 (15%)	.002
GIS mapping	0	1 (4%)	1 (2%)	.40
Healthy People 2020	1 (3%)	13 (52%)	14 (23%)	<.001
Minnesota Injury Data Access System	5 (14%)	3 (12%)	8 (13%)	1.00
Minnesota Vital Statistics Interactive Query	1 (3%)	4 (16%)	5 (8%)	.15
Fatal Review Committee	4 (11%)	4 (16%)	8 (13%)	.70

is best accomplished through shared ownership, combining knowledge and resources while working together as partners to benefit the needs of the community (Barnett, 2012). As leaders in the community, PHDs and TCs may be able to pool resources to address childhood fall prevention. Health and IP professionals have a responsibility to recognize that falls contribute significantly to the burden of injuries of our youth and must be treated with the same importance as other unintentional injuries. The findings of this study demonstrate an underappreciation for pediatric falls and limited resources available to target their prevention interventions. Both PHDs and TCs could benefit from future collaboration regarding sharing of injury data, planning, and implementing pediatric fall prevention interventions. However, further investigation is warranted to identify the best combination of approaches for establishing partnerships, overcoming barriers for implementing fall prevention interventions, and encouraging injury data sharing among PHDs and TCs.

FUTURE IMPLICATIONS FOR PRACTICE

In 2007, Minnesota legislature enacted a law that required the MDH to provide targeted education on residential window safety and window safety requirements. The MDH has a childhood IP education program imbedded in the FHV program. Public health nurses provide home safety visits along with a home safety screenings to assess and advise families on home safety risks and safe practices. As a result of the legislature, the home safety visit and assessment now include screening questions and solutions related to window safety and fall prevention in and around the home (MDH, 2011).

There is still, however, much to be done to incorporate childhood fall prevention interventions into local PHD and TC strategic plans. From these initial survey results, we conclude that further assessment is needed to identify strengths, weaknesses, and opportunities for partnership and action toward implementing fall prevention strategies in Minnesota. It is the intent of the Mayo Clinic TC staff to share the survey results to Minnesota stakeholders. Our plans include convening statewide colleagues in PHDs and TCs to encourage collective action and advancement towards fall prevention strategies; continue to monitor pediatric injury data related to falls; encourage injury data sharing among TCs, PHDs, and the state MDH; raise public awareness around pediatric fall risks and prevention strategies; and engage local and statewide partners to bring about education, awareness, and effective messaging to aid in the prevention of unintentional fall injuries in Minnesota children.

KEY POINTS

- Falls are the leading cause of traumatic injury and injury-related ED visits in the state of Minnesota for children aged 0–14 years.
- Lack of fall prevention resources is a leading barrier in PHDs' and TCs' ability to implement pediatric fall prevention interventions.
- Both PHDs and TCs use different data sources to prioritize IP efforts and may benefit from sharing data metrics with one other to best strategize IP outreach.

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