

Evaluation of a Child Injury Prevention Program.

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Abstract

The majority of injuries to children between the ages of birth and nine years on the St. Regis Mohawk (Akwasasne) Reservation occur in and around the home. This paper evaluates the effectiveness of the Humpty Dumpty Project, a child injury prevention project. Home safety surveys were conducted in 94 intervention homes and 99 comparison homes by the Injury Prevention Specialist. Homes with children under 10 years of age were identified and visited during a seven month period. A 16 item survey instrument targeting specific household hazards was used for data collection. Survey results were entered into the EPI INFO Version 6.0 for analysis. Intervention and comparison homes were very similar in terms of housing type and number of children living in the home. Overall, the Intervention homes scored significantly higher than comparison homes in 10 of the 16 items surveyed. It appears that a combination of education and active intervention is an effective way of reducing residential safety hazards on the St. Regis Mohawk Reservation.

Introduction

The setting for this study is the St. Regis Mohawk (Akwasasne) Reservation located in the northern-most part of New York State. The reserve is unique, in that the reservation is literally bisected by the United States and Canada borders. The entire reservation encompasses 25 square miles along the St. Lawrence River and is home to approximately 8,700 Mohawk people.

Injuries are the leading killer of American Indians from 1 to 44 years of age. Residents of the reservation suffer a high rate of unintentional injuries. Injuries, especially to children from birth to nine years of age, have increased in the past five years. In 1992, a total of 74 children in this age group were treated at the St. Regis Mohawk Health Services Clinic for an injury. By 1996, that total had risen to 115. A closer examination of the injury problem revealed that the home was the major risk area for children. The focus of this project was preventing at-home injuries from the most common causes: falls (73%), burns (18%), and poisonings (9%).

In 1994, the St. Regis Mohawk Health Services applied for and received a three-year grant through the New York State Department of Health, Bureau of Injury Prevention to start an at-home injury prevention program, known as the "Humpty Dumpty Project". The project was designed to work with families on a one-to-one basis and targets families with children from birth to nine years of age. The St. Regis Mohawk Health Services believes that working with families in their homes and providing education and environmental modifications will significantly reduce injuries to children in this age group. At the end of the three years an evaluation was conducted to assess whether a reduction in injuries occurred over this time period. The purpose of this project will be to evaluate the effectiveness of the Humpty Dumpty Project in reducing injuries on the St. Regis Akwasasne Reservation.

Methods

Children between the ages of birth to nine years of age were identified through a computer search of the St. Regis Mohawk Health Services, Resource and Patient Management System (RPMS). A list generated through this computer search was used to make telephone contact with homes of children in the target group. Once contact was made with either a parent or adult caring for the child or children in the home, an explanation was given describing the purpose of the study. Parents were asked whether they would be willing to participate in a home-safety survey and receive free safety materials. If a favorable response was elicited, a home visit was scheduled.

During the period March 1995, to June 1996, 123 home-safety surveys were completed for the Humpty Dumpty Project. A 60-item survey instrument was used for data collection. The home-safety survey was conducted with at least one parent or adult present. A "yes" or "no" type of answer was checked off on the survey instrument. All homes participating in the project received identical safety packets. Homes with toddlers were provided with safety gates. Safety materials consisted of replacement batteries for existing smoke detectors, electrical outlet covers and a hot water temperature gauge for burn prevention, a night light, tub decals, cord shorteners, two-sided Velcro for fall prevention, cabinet latches/locks (2 types), Syrup of Ipecac for poison prevention, and a refrigerator magnet with emergency phone numbers.

Follow-up visits were made to 94 of the 123 intervention homes from the period July 1996, to January 1997, for the purpose of this study. A revised 16-item survey instrument was used for data collection. Again, a "yes", "no",

or “not applicable” answer was checked off on the survey instrument. This group will be referred to as the Intervention group. 29 homes either could not be reached or the occupants had moved. During this same time period an additional 99 home-safety surveys were completed using the same 16-item survey instrument and procedures as with the Intervention group. This group will be referred to as the Comparison group (Table 1). This study compares the Intervention group of 94 homes that had been visited 3-18 months previously and received the injury intervention program to the Comparison group of 99 homes visited without prior intervention.

Intervention homes received the following intervention components:

1. Testing the hot water temperature at the kitchen sink. Using a hot water gauge supplied by the electric company and included in the safety packet, the hot water was run for two minutes and tested. Temperature settings were not adjusted; however, parents were advised that a lower temperature setting of 120° or less would drastically reduce the risk of scalding.
2. Smoke detectors that were easily accessible were tested either by pushing the tester button or blowing simulated smoke into the detector. Batteries were replaced if needed, either by myself or by the parent. In homes where a smoke detector was not present, a recommendation was made that at least one smoke detector was needed for the home. Parents were advised that smoke detectors could be obtained through the Humpty Dumpty program.
3. Night lights, electrical outlet covers, cabinet locks/latches, cord shorteners and double-sided Velcro (used to secure throw rugs) were provided in the safety packet. Verbal instruction was given on their use and purpose.
4. A 1 oz. bottle of Syrup of Ipecac was also provided in the safety packet. Parents were given instructions on the use of Syrup of Ipecac and what to do in case of a poisoning. They were also given a refrigerator magnet containing the phone number of the Poison Control Center.
5. In homes where a child under the age of two resided and the home had a stairwell accessible to the child, a child safety gate was provided. Only verbal instruction was given as to installation.

Intervention homes and comparison homes were inspected for the following components:

1. Whether or not there were handrails on the primary or secondary entrances to the home and the stairway leading to the basement or second floor.
2. Whether child safety gates were used at a stairwell accessible to a child under 2 years of age.
3. Whether windows in the kitchen, living room, child or children’s bedroom were locked or whether the window was protected by some type of window guard.
4. If the floor of the tub or shower used by children had a non-slip surface, either textured or covered by a bath mat or decals. Tub decals were provided in the safety packets.
5. If the floor was free of tripping hazards. In the main traffic area of the home, electrical cords creating a tripping hazard were pointed out and moved out of the way. Where floor coverings were either frayed or curled, recommendations were made to repair damaged floor coverings. Objects such as toys, shoes or boots left in the main traffic area were also considered a tripping hazard.
6. Whether toxic chemicals were kept locked away or out of reach of children. In all homes, the cabinets under the sink in the kitchen and the bathroom were inspected for anything that could be considered toxic (i.e., window, ammonia, SOS pads, paint, shoe polish, nail polish, plant food, etc.) and whether there was any type of cabinet lock or latch used to keep these products away from small children. Parents were informed that two types of cabinet locks/latches were provided in the safety packet.
7. Parents were asked to show where medications such as prescription drugs, over-the-counter medicines and vitamins were stored. What I looked for was whether they were kept up high and out of reach of children or whether they were kept in a locked cabinet.
8. The hot water temperatures were re-tested using the same procedure as before.
9. Electric base heaters were inspected for protective guards. In homes heated by a woodstove, I looked at whether there were any protective barriers used to keep a child away.
10. Smoke detectors were also tested again to ensure that “at least one operable smoke detector” was installed in the home.
11. In the kitchen, living room and any bedrooms used by children, electrical outlets that were easily accessible to a child were inspected for outlet covers of any type.
12. Whether matches or lighters were kept out of sight and reach of children.
13. Parents were asked whether a child had been injured at home in the past year and to give details about the injury.

Survey results were entered using EPI INFO Version 6.0. Data was analyzed using chi-square statistical tests with the Mantel-Haenszel correction.

Results

A total of 193 homes were visited during this seven-month period. 94 homes were visited in the intervention group and 99 in the comparison homes. The intervention and comparison homes were very similar in terms of housing type and number of children living in the home (Table 1). In both groups, slightly more than half the households (56% and 54%) had two or more children present. Single-family dwellings (34% and 39%) and HUD homes (40% and 32%) were most common in both groups. Table 2 summarizes the survey results. Intervention homes had implemented and maintained 10 of the 16 injury prevention measures more frequently than did the comparison homes. Education alone was used for nine items. In four of these nine items (44%), there was no statistically significant difference between the two groups. On the other hand, active interventions were used for six items: non-slip decals for tubs and showers, safety gates for toddlers, changing smoke detector batteries, testing hot-water temperatures, and providing outlet covers and cabinet locks/latches. Except for cabinet locks, the intervention homes had a higher frequency of use than in the comparison homes.

Discussion

Home visits appear to be a very effective way to address residential safety hazards and at-home injuries to children. Overall, Intervention homes had significantly higher safety scores than Comparison homes. A combination of active interventions and education was more effective than education alone in reducing at-home injury risk factors. When the active intervention required more time or skill of homeowners, such as having to install cabinet locks, the intervention was less effective. One limitation of this study was that it was not a randomized trial. While the two groups were very comparable in terms of number of children at home and type of home, there may have been differences (such as higher income or higher education achievement) among parents in Intervention homes that biased the results in favor of the Intervention group.

Conclusions and Recommendations

The Humpty Dumpty Child Injury Prevention Project reduced at-home injury hazards at participating homes. Other community injury prevention efforts may have also contributed to this reduction. If the home visiting approach is to be repeated in other communities, I would recommend that:

1. active interventions (e.g., lowering hot water temperatures, changing smoke detector batteries) be used as much as possible in addition to educational efforts;
2. data collection forms use objective items, such as testing smoke detectors, rather than relying on adults reporting whether or not a safety hazards exists;
3. follow-up at participating homes be conducted to determine the use and effectiveness of implemented injury-prevention measures.

Table 1: Characteristics of households

Number of children	Intervention homes	Comparison homes
1	41 (44%)	46 (46%)
2 or more	53 (56%)	53 (54%)
Total	94 (100%)	99 (100%)
Type of home		
Apartment	8 (9%)	9 (9%)
HUD	38 (40%)	32 (32%)
Single family	32 (34%)	39 (39%)
Trailer	16 (17%)	19 (19%)

Table 2: Safety Measures in Intervention vs. Comparison HomesA. p value $< .01$

	<u>Item</u>	<u>Intervention</u>
90% vs 72%	Handrail on primary entrance	Education
91% vs 61%	Handrail on secondary entrance	Education
90% vs 47%	Child safety gate at stairway	Gates provided
97% vs 82%	Non-slip surface of tub/shower	Decals provided
94% vs 70%	Hot water temp less than 120 degrees	Temperature tested
96% vs 84%	At least one operable smoke detector	Batteries replaced

B. $p < .05$

94% vs 74%	Handrail on stairway to basement	Education
95% vs 81%	Handrail on stairway to second floor	Education
93% vs 83%	Heating units inaccessible to children	Education
40% vs 20%	Electrical outlets covered	Outlet covers provided

C. Not significant ($p > .05$)

88% vs 90%	Windows locked	Education
77% vs 72%	Floor clear of tripping hazards	Education
39% vs 26%	Toxic chemicals inaccessible	Cabinet locks provided
73% vs 67%	Medications inaccessible	Education
85% vs 79%	Matches/lighters inaccessible	Education
2% vs 4%	Child injured in past year	