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CHILDHOOD HOME INJURIES

A Nursing Student Approach to Preventing Childhood Home Injuries.

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Abstract

Unintentional injuries are the leading cause of death for children under 14 years of age. Of the unintentional injuries, a significant portion occurs within the home setting. Creating a safe home environment for children has become a focus in current efforts for health promotion and injury prevention. Our objective is to enhance caregivers' knowledge of home safety thus decreasing the incidence of childhood unintentional injuries. To this end, a series of educational workshops were conducted on poisoning, choking, furniture tip-over, scalds and burns. The material was presented via PowerPoint, videos, posters, handouts, demonstrations and return demonstrations. Verbal pre-and post tests and return demonstration were used to determine the effectiveness of these workshops. The number of participants from each workshop varied from 11 to 14. Pretests revealed that no more than 33% of the participants were able to give correct responses. This percentage increased to 75-100% for the posttests. Conclusions: Comparison of pre and posttest participant responses revealed increased knowledge of common childhood home injuries, prevention strategies, and how to respond should an injury occur. More studies should explore caregivers' actual implementation of safety knowledge within the home environment.

The home injury prevention project originated in the Community Health course of Old Dominion University's School of Nursing. This group of eight nursing students worked with the Consortium for Infant and Child Health (CINCH) to focus on the well-being of children in the Hampton Roads area of Virginia. After the initial assessment, the group found that risk for injury in the home environment is a significant health issue for the chosen aggregate, and the aggregate's inadequate knowledge about injury prevention plays an important role in the high risk for injury. Prevention via education is an important nursing role and was the primary intervention strategy chosen to address and prevent childhood home injuries. Therefore, injury prevention via education was determined as the overall plan for this project.

Unintentional injuries have taken a toll on the general well-being of the public, especially children. According to Centers for Disease Control and Prevention ([CDC], 2009), more than nine million children between birth and age 19 are seen for injuries each year in U.S. emergency departments. Injuries are the leading cause of death among children in this age group. The Children's Hospital of the King's Daughters (2005) stated that approximately 45 percent of unintentional injury deaths occurred in and around the home. Fire and burns, suffocation, drowning, firearms, falls, choking and poisoning are the primary causes of unintentional home injury deaths to children. Maintaining a safe home environment is crucial in decreasing the incidence of childhood unintentional injuries. To enhance the home safety knowledge of children and their caregivers, a home injury prevention project in the form of educational workshops was implemented by the Old Dominion University (ODU) School of Nursing students. The purpose of this article is to describe the process and evaluate the outcomes of this home injury prevention project.

Literature Review

The ODU nursing group used available evidence to guide selection of the aggregate and the interventions utilized in this project. People living in lower socioeconomic communities tend to report relatively poor self-rated health status (Haines, Godley, Hawe and Shiell, 2008). Mulvaney and Kendrick (2004) also found that families from non-white ethnic minorities are less likely to engage in home safety practices and that there were inequalities in access to information regarding the availability and fitting of safety equipment. These findings indicate the need for increased home safety education for ethnic minorities and/or the population with lower socioeconomic status. In addition, Hong et al. (2008) found that caregivers' provision of a safe home environment resulted in a reduced level of risk-taking behaviors in children; therefore, a reasonable expectation can be made that by helping caregivers improve their home safety practices, positive influences could also be brought to their children's behaviors.

Home safety education delivery method is an important factor that influences the effectiveness of the interventions. Workshops, along with follow-up home visits, have been found to be valuable in home safety education. Cagle, Davis, Dominic, and Gonzales (2006) developed a pilot intervention program utilizing the form of one- to two-hour workshops to teach families about fire hazards and risks at home, as well as providing and installing fire safety devices in follow-up home visits. After pre-test and post-test, as well as the follow-up home visits, this fire prevention program was deemed effective at decreasing the number of scald risks per home and decreasing the rate of scald burns in the population.

Home safety education should not exclude children. On Safe Kids Day in 2008, a study was completed utilizing the Family Safety Education trailer which simulated a three-bedroom unit with front and rear entrances and 13 different hazard setups commonly found in homes.

Ninety children 3-17 years of age were included in the assessment. Twelve out of the 13 hazards were recognized by at least 50% of the children, with the one exception being foil in the microwave; it was the most missed hazard overall. In light of this study, children should be included in home safety education intervention since they are capable of recognizing some safety hazards depending on their developmental stage (Schooley & Kelly, 2008). In addition, findings from research indicate the need to address the common psychological barriers when teaching home safety. For example, Dwyer (2008) found that fear of failing and fear of incorrect techniques were the main reasons people lack confidence in initiating CPR on family members during an emergency. These identified barriers should receive adequate attention in the educational workshop on choking and infant/child CPR.

Based on the literature review, educational workshops on home safety targeting a high-risk population should be the focus of the home injury prevention project.

Methods

Community partnerships. Community partnerships were established to facilitate the successful completion of the home injury prevention project. At the early phase of the project, Hampton Healthy Families Partnership (HHFP) and Hampton Redevelopment and Housing Authority (HRHA) were contacted. Both facilities, located in Hampton, Virginia, agreed to collaborate with the ODU nursing students in order to provide the venue and suggest sources of potential participants. The nursing students planned four workshops for the HHFP parenting classes and one workshop in the community center of Lincoln Park, a low-income housing complex in Hampton, Virginia, managed by HRHA. In addition, experts from the Perinatal Council and Virginia Poison Control Center in Richmond reviewed the content of choking/CPR and poison prevention respectively. Norfolk Fire Department, Hampton Fire Department, and Tidewater Center for Life Support also provided other forms of educational and technical support for the series of

Participants. The participants in the project included the clients of HHFP's parenting class and the students of the Head Start afterschool program who reside in HRHA's Lincoln Park Community. The HHFP waived the \$50 fee for residents of Hampton, Virginia; however, the cost may have limited the participation of residents from nearby cities. Therefore, the workshops consisted solely of Hampton residents. Despite the geographical limitations, participants from a variety of backgrounds were included, such as Caucasian, African American, Hispanic, and Middle Eastern. There were different types of family units in the series of workshops: some were couples, some were single mothers, and some were grandmothers assuming the role of the child's primary caregiver. Various age groups were also included in the teaching workshops, including preschool children, school-age children and adult caregivers. The number of participants in the workshops held at HHFP's parenting class varied from 11 to 14 for each session, and 12 students from the afterschool program participated in the fire safety teaching.

Interventions. This project focused on primary and secondary injury preventions. Primary prevention focuses on preventing a disease, illness or injury to optimize the health of a person or population. In the educational workshops, the nursing students taught the caregivers how to eliminate hazards for poisoning, choking and suffocation, falling, and scalds/burns to prevent home injuries from happening. Secondary prevention includes identifying those at risk for home injuries and providing services and education to decrease or eliminate those risk factors. The Lincoln Park residents were identified as a high-risk group for home injuries, especially those caused by residential fires; therefore, teaching was provided to its child residents to identify and modify their risk-taking behaviors, such as playing with lighters. The children were provided with education on the consequences of such behaviors and the correct methods to prevent and/or deal with fire emergencies. Because of time constraints, home visits, as part of the secondary prevention, were not implemented. Other secondary prevention strategies included teaching infant/child CPR, the correct usage of a fire extinguisher, and the stop-drop-and-roll technique.

Five interactive workshops addressed four different areas of home safety: poisoning, choking and infant/child CPR, furniture tip-over, and burns/scalds. The furniture tip-over was taught at the HHFP on-site child care center to preschool children, whose parents were attending the choking/CPR workshop at that time. One of the two fire safety workshops was conducted at the afterschool program for school age children. Each workshop lasted 60-120 minutes.

The first workshop addressed poison prevention and poison first aid. Visual aides such as pamphlets, displays such as look-a-like poison and common choking hazards, and colorful, eye-catching PowerPoint slides were utilized to enhance learning. The participants were also encouraged to share their concerns about effective poison prevention at home. The workshops on choking/CPR and furniture tip-over were conducted the following week. In the choking/CPR session, the nursing students used plain language such as "throat" and "windpipe" to help the participants understand the basics about the human airway.

Well known and frequently missed choking hazards were then identified and discussed. Lastly, infant/child CPR was demonstrated by the nursing students and certified CPR instructor on manikins; the participants were also asked to perform return demonstrations. The furniture tip-over teaching utilized activity booklets and coloring pages, designed by one of the students, to teach pre-school children to identify "no" behaviors, such as climbing on furniture. The final workshop addressed fire safety for participants at the HHFP parenting class and children in the Head Start afterschool program at Lincoln Park. Fire prevention tips, fire escape routes, and stop-drop-and-roll practice enhanced the participants' knowledge of fire safety. Hampton Fire Department also mobilized its fire truck and ambulance to provide additional information about fire safety to children residing in Lincoln Park.

The students used home safety incentives at each workshop. At the end of the fourth workshop, fire extinguishers were given to two participants after a drawing.

Main outcome measures

Pre-tests, post-tests, and return demonstrations were used to assess the effectiveness of the interventions. Because our time was limited, we did not use evaluation techniques requiring IRB approval. The group also noted anecdotal comments from participants. The pretests consisted of general questions and/or scenarios to assess the existing knowledge level of the participants. Post-tests used more specific and more in-depth questions and/or scenarios to assess the participants' comprehension of the content delivered. The estimated percentage used in the results section was obtained by counting the number of participants who raised their hands to answer the questions/scenarios. The evaluation method for fire safety instruction at the Lincoln Park community center differed slightly. Although general pre-test questions were used, posttests did not utilize the question-answer format. Instead, each student was asked to verbalize one fire safety tip at the end of the teaching session.

Results

Before the poison prevention workshop, participants had many misconceptions about emergency measures for a child who has ingested an unknown substance. These included inducing vomiting, giving water, etc. Their knowledge of poison prevention was limited to keeping medications in child-proof containers. In the posttest, over three-quarters of the participants identified the common places in the home where poisonous materials can be found. The participants also named additional ways to prevent poisoning. For example, one participant stated the need to "lock poisons, cleaners, and medications where children cannot reach." Another participant answered that "a parent should always keep cleaners in their original containers so a child would not mistake it for something else, like apple juice." Additionally, all participants were able to state that they should call the poison control phone number immediately if a child ingested unknown material.

In the session on choking/strangulation prevention and CPR, though all parents recognized that small objects were choking hazards, they were unaware that latex balloons are the number one choking hazard for children under four years of age (Hockenberry & Wilson, 2007). In the post-tests, most of the participants were able to correctly identify the number one choking hazard and demonstrate how to respond to a choking child depending on whether the child is coughing and whether the child is conscious. With the pretest on strangulation, the participants were able to identify obvious strangulation hazards such as rope and threads; during the posttest, they were able to identify additional strangulation hazards that were previously neglected, such as mini blind strings, pacifiers with clips, necklaces, and draw strings on certain clothing. Regarding CPR, no participant was able to accurately articulate the purpose of CPR and situations in it is necessary to use this intervention; in the posttests, about half of the participants could articulate the reason for CPR, and all participants except for one with left-sided weakness demonstrated CPR on the manikins with correct techniques.

For the fire safety workshop taught to adults, less than a third of the participants were able to answer the pretest questions, but all of the participants were able to correctly answer the posttest questions of the same content. A randomly selected participant was able to explain the steps of the proper use of a fire extinguisher, and all participants were able to state that sleeping with the bedroom door closed is essential to reduce smoke inhalation in case of a fire.

Additionally, all participants by the end of the teaching session were able to correctly state the distance required between a space-heater and other objects. Before the fire safety workshop at Lincoln Park, the children were unable to verbalize any fire prevention tip and reported behaviors that easily lead to residential fires. During the workshop, all children drew the fire escape routes, created emergency contact cards, and demonstrated the stop-drop-and-roll technique. At the end of the session, each student verbalized one safety tip related to fire safety.

Conclusion

Interactive educational workshops were effective methods in enhancing children's and caregivers' knowledge about home safety practices. Many participants verbalized their appreciation of the opportunity to learn and practice home safety strategies. A female participant even shared in the workshop how she benefited from the teaching: by calling the poison control phone number, she was able to calm down and follow the telephone instructions after her son had ingested some of her hair-dye solution. In addition, directors from HHFP and HRHA expressed their desire to continue working with ODU nursing students and to expand such interventions in the future. Evaluation data suggested that the goal of enhancing the aggregate's knowledge of home safety was achieved. Providing client education is an integral part of the nursing profession. By working with high-risk populations in the community, the ODU nursing students were able to increase these populations' awareness of home safety practices. This home injury prevention project is another positive example of how community health nursing can bring far-reaching effects on health promotion and injury prevention. Further research is necessary to explore the participants' application of the acquired knowledge and to determine if education leads to a decreased number of home injuries. Education of high-risk families nonetheless has proven to be a cost effective first step in home injury prevention.

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Biographical Sketch

The home injury prevention project was designed and implemented by Old Dominion University nursing students during a two-semester Community Health Nursing course. This group of students worked with the Consortium for Infant and Child Health, which is under the Pediatrics Department of the Eastern Virginia Medical School, to promote health and prevent injuries in the Hampton Roads community. This group formed in August 2008 and conducted a series of five educational workshops in the community, covering home safety topics such as poisoning, suffocation/choking/strangulation, furniture tip-over, and fire safety. The nursing students that participated in this home injury prevention project are Katherine Carman, Renee Farmer, Katelyn Kerr, Charles Kua, Katharine Pairis, Jingjing Sparrow, Shelly McGaha, and Shaughanasee Williams.