Development, Implementation and Evaluation of a Unique African-American Faith-Based Approach to Increase Automobile Restraint Use

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Objective: Despite generalized intervention programs, restraint use among African Americans remains below national levels, especially among children. This study describes the development and implementation of a community participatory faith-based youth injury prevention program.

Methods: Through a partnership with the African-American faith-based community and our injury prevention group, a unique multigenerational intervention program was developed targeting motor vehicle restraint use. Once developed, the program was initially evaluated by comparing outcomes between control and intervention churches. The main objective was to observe adult and pediatric restraint use before and after program implementation.

Results: Overall, there was excellent recognition and participation in the program. Following program implementation, significant improvements were observed in restraint use compared to control churches. In particular, there was a 72% reduction in unrestrained children, a 25% increase in children being secured in the rear-seat position and a nearly 20% increase in driver restraint use.

Conclusions: The development and implementation of a culturally sensitive intervention program can significantly improve restraint use in a minority population. Partnering with the community in all phases of the program is essential to its success.

Key words: health disparities ■ child restraint ■ injury prevention

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INTRODUCTION

Unintentional injury is the leading cause of death for all children in the United States. In particular, motor vehicle crashes are responsible for 294,000 children killed or injured per year.[1] Proper restraint use is the most effective way to reduce the risk of fatal and serious injury. Unfortunately, as many as 30% of all children in the United States continue to ride unrestrained.[2] Economically deprived and minority children are disproportionately affected by these injuries. In fact, among 5–12-year-olds, African Americans are almost three times as likely to die in car crashes and are 50% less likely to be buckled up than Caucasians.[3,4]

In spite of numerous generalized transportation safety intervention programs, motor vehicle crashes remain the leading cause of death of African-American children ages 0–14 years, and seat belt and child restraint use among African Americans remains lower than the national average.[4-6] Such persistent disparities have led to a call to action by the National Highway Traffic Safety Administration (NHTSA) to develop and test interventions to reduce transportation injuries among minorities.

The reason for the disproportionate rate of injury among African Americans is unclear. One important factor seems to be that minority and economically disadvantaged families are less likely than the general population to make appropriate use of effective injury prevention devices and apply safety-related behaviors.[3,7,8] This, in part, may be related to both a general lack of knowledge and a strong belief in destiny.[4,9]

Cultural differences and the lack of culturally appropriate messages appear to be the primary factor for the lack of success of generalized intervention programs among minorities.[10,11] By addressing these short comings, community-based, culturally sensitive strategies appear to be a more effective approach to empower the participants and improve passenger safety among minorities.[12-15]

Compelled by the relatively unmitigated incidence of motor vehicle injury-related deaths and disability among minorities, we have used a community-based

participatory approach to develop a unique faith-based, culturally sensitive injury prevention program. The program was implemented and prospectively evaluated to test the hypothesis that a culturally relevant/sensitive community-based program focused on transportation safety would lead to significantly improved child occupant restraint use among African Americans.

METHODS

Program Development

Focus groups were conducted at four local churches in cooperation with local African-American ministers. The primary objectives of these groups were to identify knowledge and prevailing attitudes surrounding passenger safety among African-American family members. The groups were segregated by age such that input was obtained from parents, grandparents and children 4–17 years of age. Each group consisted of 10 participants and was led by an experienced African-American facilitator.

An advisory committee consisting of church ministers, injury prevention coordinators, physicians, church congregation members, staff members of the Cincinnati Red Cross and Boy Scouts of America as well as lay leaders of the local faith community developed the program curriculum. The advisory committee utilized relevant aspects of social learning theory and the health behavior model in developing a culturally relevant injury prevention program.

Program Implementation

A cohort of 14 predominantly African-American churches was selected based on the presence of an established infrastructure for secular and religious edu-

Table 1. Components of the youth injury prevention program

1. Curriculum
The children received a scripture-based, Sunday-school injury prevention curriculum that extended through the nine-month school year. The curriculum provided age-appropriate, culturally sensitive, interactive activities and materials for children 5–14 years of age and addressed several injury prevention lessons, including child passenger safety, fire, pedestrian, bicycle, firearm and home safety issues (i.e., drowning, helmet usage, falls, etc.). In each separate component, there was a scripture associated with that component and a total of eight lessons. Activities included using African-American dolls and safety seats in the classroom and teaching songs about riding in a car seat.

2. Teen Empowerment Program
The techniques used had special appeal to adolescents, such as visualization and "powerful word" activities. Teen POWER stood for P: powerful, O:outstanding, W: wonderful, E: examples of R: responsibility presentations, which were held at the church. The magnitude of the risk and consequences of failing to take simple injury prevention measures were emphasized. Teens were empowered to become role models for the younger children and participated in developing the curriculum for the younger Sunday-school participants. The dangers of driving and riding unrestrained, distractions for inexperienced drivers, and other important vehicle safety issues were presented. It was important for the teens to understand their transitional role. They should help out their parents with the younger children and continue to remember the rules for their own safety. The recurring theme for the teen program was that every occupant must wear a safety belt.

3. Parent and Grandparent Educational Series
Before parents/grandparents can protect their children, they must become aware of the need for protection and have the knowledge necessary to take the appropriate action. Programs were offered at each church to raise awareness of the need for all family members to be restrained and to practice other injury prevention behaviors. These programs did feature presentations by Cincinnati Children's Hospital Medical Center (CCHMC) physicians and by African-American parents whose children have been injured or who have died from injuries. Parents were recruited who were willing to share their stories and give testimony that pediatric injury can and does strike devastatingly within the African-American community.

4. Ministerial Messages
The ministers addressed the importance of individual responsibility in preventing injury and incorporated these messages into their sermons. The church leaders made injury-related announcements and included injury prevention information in the church bulletins and the newsletters. A contact person at each church provided leadership and helped to facilitate the administration of the program. Some of the lectures given by the African-American program directors were given either during the sermon or directly after the Sunday service. The ministers played a key role in getting their congregation involved with this program.

cation at the church. The churches were randomly assigned to an intervention group (7) receiving the injury prevention program or to a control group (7) receiving a nutrition education program without any adjustments based on congregation size. Churches that participated in the focus groups during development were excluded from this portion of the study.

Program Evaluation

The outcomes of primary interest were the difference in restraint use and proper seating position between the control and intervention groups. Trained observers, including selected congregation members, conducted unannounced observations of congregation members parking in the church parking lot for Sunday school and services. Only church coordinators and ministers were aware of when the observations would take place. Observers recorded number of passengers, whether passengers were adults or children, restraint use and seating location in the vehicle. Observations occurred prior to the initiation of the program and within three weeks of completion of the program at respective churches.

As part of the program, safety seat checks and installations were conducted at the intervention churches by child passenger safety technicians. The number and percent of the families who participated in the car seat check, the types of misuse identified, and the number of safety seats distributed as replacements for unsafe or inappropriate seats were recorded in order to evaluate the value of this portion of the program.

Finally, in order to evaluate the perceived value and utility of the program by church members, a questionnaire was developed to assess program awareness and congregation member participation. The questionnaire was distributed at the conclusion of the program to adult congregation members who were parents, grandparents or guardians of children.

Statistical Analysis

Descriptive statistics, including frequencies and median values when appropriate, were calculated to examine congregation awareness and participation in our program. Bivariate logistic regression cluster analysis was used to determine associations between the pre-

Table 1. continued

5. Theatrical Performance
The theatrical performance entitled, "Give us This Day," is a faith-based original ethnic injury prevention play focusing on the importance of child passenger safety and the tragic consequences when a parent does not know how to protect à child. The play used a combination of biblical verses, songs and statistics to tell a story of a family struggling to understand the death of a young child in their community. Characters for the play were both professional actors and children from the congregation. The booklet for the play included facts about injuries, when to use a child safety seat versus an adult safety belt, a safety word puzzle, questions about the play, and safety questions with the answers in the back of the pamphlet. There were two performances for each church.

6. Family Safety Fair
The safety fair had five interactive stations. The stations covered activities regarding pedestrian safety, home safety, child passenger safety, gun safety, fire prevention and drowning prevention. The teens within each church actually ran the safety fair stations. This program reinforced existing safety knowledge and provided information helpful to parents as they work with their children.

7. Car Seat Checks
The safety seat checks were held at each church to assure that the parents were properly installing and using child restraint systems. Parents were taught the basic principles of child passenger safety, how to select the appropriate restraint system and how to install their seat properly. Child passenger safety technicians installed the car safety seats. The congregation signed up to have their car seat inspected by a certified technician. If the congregation member could not afford a car safety seat, one was provided for them.

8. Congregation Empowerment
The ministers within the churches developed special sermons that focused on safety. There was a consistent message that was shared with the congregation members during and after each church service. In addition, interested adults within the congregations received child passenger safety training and participated in safety seat checks.

9. Safety Device Distribution
The program stressed the importance of using safety seats and other prevention devices. Safety devices, such as safety seats, bicycle helmets and carbon monoxide detectors, were provided at no charge to the families that could not afford them.

and postobservations. We defined a p value of <0.05 to be statistically significant. All statistical analyses were performed with SAS (version 8.02 SAS Institute Inc., Cary, NC).

RESULTS

Program Development

Thirteen focus groups took place in four African-American churches. There were three parent groups, two grandparent groups and eight age-specific groups of children ranging from 4–17 years of age. The principal focus group findings that influenced the program development were: 1) parents and grandparents dramatically underestimated injury severity and incidence related to motor vehicle crashes, 2) most participants reported they do not consistently wear a safety belt, 3) most children age <12 years reported wearing a safety belt "most of the time," 4) self-reported safety belt usage among teens suggested they rarely wore seat belts, 5) belief by many that "God will protect them" led to lack of restraint use, and 6) older children believed that stories detailing real-life situations would be effective in raising awareness of the dangers of risk-taking behaviors. The advisory board used these findings, as well as behavioral learning methods,[16,17] injury epidemiology data[3,18,19] and the best practices of previously successful health promotion programs targeting African Americans[12,20-22] to guide the development of the faith-based injury prevention curriculum. In addition, with the assistance of the ministers on the advisory committee, biblical references and passages were identified that supported personal accountability in insuring the well-being and safety of children and directly refuted the identified barriers, particularly the belief in divine intervention and predetermined destiny.

The program, called the Youth Injury Prevention Initiative (YIPI), offered a reiterative series of proprietary family-centered educational and social interventions for parents, guardians and children (Table 1).

Table 2. Number of congregation members in churches

Church	Number of Congregation Members	
	Intervention Church	Control Church
1	1,000	1,000
2	1,000	600
3	700	675
4	1,500	700
5	1,500	450
6	1,000	1,000
7	3,000*	67

* Church withdrew after randomization

Program Implementation

Prior to initiation of the YIPI program, the injury prevention coordinator personally met with a minister from each participating church and reviewed the rationale, program goals, objectives and desired outcomes. The minister then selected a coordinator from the congregation to organize, implement and monitor program activities. Repeated announcements regarding the YIPI program made by ministers from the pulpit during scheduled services underscored the importance of the initiative. Printed announcements were posted on church bulletin boards and highlighted in church service bulletins and newsletters throughout the nine-month period.

At each intervention church, Sunday school staff and youth school leaders were trained how to implement the YIPI curriculum. Training consisted of a review of course and interactive materials, audiovisual aids, handouts, books and local injury statistics. Whenever possible and in accordance with HIPAA regulations, clinical vignettes of church members involved in car crashes were used to illustrate either the value of restraint use or the consequences of not using restraints. The YIPI program coordinator and hospital-based physicians were available to answer questions and troubleshoot during implementation.

Program Evaluation

A total of 14 churches participated, randomly assigned as intervention (7) or control (7). One intervention church withdrew from the study due to internal matters unrelated to the study. The congregation sizes ranged from 67–3,000 total members (Table 2).

One-thousand, twenty-four program awareness and

Table 3. Safety program activities in which congregation members participated

Activity	Participated (%)	Did Not Participate (%)
Parent meetings on safety topics	8.58	91.42
Sunday-school safety programs for children	36.91	63.09
Read safety messages in the church bulletin	44.64	55.36
Heard safety messages from the minister	30.47	69.53
Attend the play	57.94	42.06
Car seat check	60.94	39.06
CPR certification	11.16	88.84
Safety fair	9.44	90.56

level-of-participation questionnaires were returned for analysis from the six participating intervention churches. Seven-hundred-seventy three (75%) of these were ≥50% complete and therefore used in the analysis. Sixty-five percent of the respondents were parents, 26% were grandparents and 9% were guardians. Eighty-one percent of the respondents reported that they were aware of the YIPI program at their church and >92% indicated that their church should be involved in promoting family and child safety. When evaluating level of participation, the questionnaires revealed that the activities most frequently attended were the car seat checks (60.9%) and the Afro-centric play entitled, "Give Us This Day" (57.9%). Additionally, ≥30% reported that they were exposed to safety messages from the minister, in the church bulletin or during the Sunday school program (Table 3).

A total of 2,910 vehicles were observed (1,966 intervention, 944 control) to evaluate restraint use and seating position. Among these vehicles, 4,727 adults and 908 children were observed. The results demonstrated that children ≤8 years old exposed to our intervention had significantly increased proper rear-seat positioning and restraint use (Table 4). More than 25% of those not in the rear seat prior to the intervention were noted to be in the proper seating position postintervention. Following the program, there was a remarkable 72% reduction in the number of children riding totally unrestrained. Importantly, the postprogram safety belt use by drivers was also significantly higher among the study group, and the passenger restraint use in cars with restrained drivers increased by 60% (Table 5).

During the program, scheduled car seat checks were performed. A total of 125 cars were assessed for the presence and appropriate use of infant/child restraint devices. Thirty percent of the cars evaluated did not have an appropriate safety seat for the children ≤8 years old who traveled in the car. Of those cars with child passenger seats, 55% were unsafe according to a certified child passenger safety technician. In addition to the safety seat checks, 100 car seats were distributed to church members of limited means.

DISCUSSION

Through a partnership with the African-American community we have developed, implemented and evaluated a unique, faith-based injury prevention program. The YIPI was developed in a culturally sensitive and relevant manner that promoted community empowerment and participation. As a consequence, this multigenerational community approach resulted in significant increases in restraint use in this underserved, high-risk portion of the population.

The success of our unique program in having an impact on behavioral changes among this minority population was multifactorial. The development of the program utilized both social learning theory (SLT)[16] as well as the health behavior model.[21,23] In addition, throughout development, we utilized a community-based participatory research (CBPR) approach.

With regard to adoption of injury prevention behaviors, SLT would predict that children and their parents would learn to utilize these behaviors through a combination of several factors. These include observing correct use of restraints by other children and adults, direct experience of parents and children in properly using restraints (e.g., which may be obtained through role playing and behavior rehearsal) and positive reinforcement for correct use and performance. In the African-American religious community, the minister and elders are also part of the learning environment, arguably, at times, more influential than a child's parent or guardian. As such, to the extent that the minister and the congregation accepts and endorses the safety behavior as a responsibility of the congregation, the adult, teen and child members of the congregation will be more likely to adopt the prescribed behavior on an individual basis.

Such faith-based programs have previously been successfully implemented in the African-American

Table 4. Rear-seat positioning and unrestrained children <8 years of age

	Pre	Post
Rear Seating Position (%)		
Intervention churches	54.0 (n=298)	66.0* (n=266)
Control churches	46.9 (n=177)	53.1 (n=167)
Unrestrained Children (%)		
Intervention churches	36	10*
Control churches	27	18

* Significant at p<0.05, n represents observed children in each group, same numbers for unrestrained children portion of table

Table 5. Seat belt use of drivers and their passengers

	Pre	Post
Restrained Drivers (%)		
Intervention churches	58.6 (n=1,079)	73.6* (n=887)
Control churches	57.8 (n=465)	65.9 (n=479)
Restrained Passengers if Driver Restrained (%)		
Intervention churches	57.8 (n=579)	74.7* (n=559)
Control churches	57.8 (n=308)	68.3 (n=371)

* Significant at p<0.05, n represents number of observed individuals; values are percent

community focusing on nutrition (Eat for Life),[22] coping with stress,[20] and health promotion,[21,24] but, to our knowledge, this approach has not been utilized previously for injury prevention. Using these models, our YIPI program was successfully developed and implemented in cooperation with the community

The principles of CBPR, utilized during our program development and implementation, ensure a partnership approach to research that equitably involves community members, organizational representatives and researchers in all aspects of the research process.[25] All partners contributed their expertise and shared responsibilities and ownership of the project. CBPR helps to address the gaps related to sociodemographic and economic characteristics between the public and "experts."[26,27] Including community members as equal partners, as done in our program, has the potential of bridging the cultural gaps that exist between involved partners.[25,28] This approach is particularly useful for addressing the persistent problems of health disparities.[29] According to the American Public Health Association, prevention research often has not been as effective as it could be because it has not included participants in all aspects of the intervention design, implementation and evaluation.[30] Utilizing these principles, our program was able to capitalize on the community resources and involve the community on all levels.

As a result of the early involvement of community members in planning and development, we encountered relatively little difficulty in engaging the congregation in injury prevention activities. Car seat checks, Sunday school classes and the play were well attended. Congregation members took particular note of safety messages presented by the minister and printed in the church bulletin. Despite community involvement, attendance at some of the events was lower than anticipated. Based upon informal feedback from congregation members, we have been able to identify additional barriers that limited participation. Much of the feedback related to accessibility of events revealed that attendence was limited secondary to limited scheduling. Additionally, the community members suggested that some events be more focused to individual church needs or be combined with other health-related issues affecting the community. In response to this feedback, we have begun to make minor alterations to the program.

Our preintervention observations of seat belt use by congregation members and their children are consistent with other studies that have demonstrated that seat belt use by minorities does not meet national standards for safe travel.[31] Prior to the intervention, >40% of the congregation members were not properly restrained. Following our intervention, >75% of the congregation members were properly restrained, a nearly 50% improvement. Nationally, each percentage point increase in safety belt use represents 2.8 million more people buckling up, 250 more lives saved and 6,400 serious injuries prevented annually.[1] Although over the relatively short time frame of our study we were unable to demonstrate a reduction in injuries or fatalities, it is possible to extrapolate the significant impact of a 50% improvement in restraint use on our target population given the national estimates.

In addition to simply improving restraint use, it is known that proper use of child safety seats reduces the risk of death by 70% for infants and 55% for toddlers 1–4 years old.[1] Additionally, it has been demonstrated that the use of booster seats for children 40–80 pounds or <4 feet 9 inches tall between 4–8 years old reduces injury risk by about 60%.[32] Although our observations were limited in that it was not feasible to ensure that the age- and weight-appropriate restraint was utilized, we did educate families on these issues as well as perform car seat checks and provide seats to families in need.

Nationally, up to 94% of child restraints are incorrectly installed, and 37% of this improper use could lead to significant injury.[33] In our population, we found that nearly a third of those evaluated did not have an appropriate restraint for their children aged <8 years old. Even more alarming was that of those that did have restraints, 55% were determined to be unsafe. Although we did not perform random follow-up of these cars, it is anticipated that through the provision of 100 child restraints and the education provided, as well as the results of our improvement in overall restraint use and proper seating position, our program likely improved these poor baseline numbers.

Launching a partnership between an academic center and African-American churches is a challenging endeavor. Building relationships with the church and all the partners required extensive time and coordination. Our study, however, confirms that a partnership with the faith community is feasible and is an essential tool in addressing health disparities. Although several community- and faith-based programs have been successfully developed,[34-38] to the best of our knowledge, the YIPI program represents the first injury prevention effort partnering with the faith-based community. Churches are a very prominent and influential organization in the African-American communities that reach a sizable population. It is important to recognize that churches have the unique capacity to affect the lives of children, parents, grandparents and the entire community. Furthermore, our data agrees with prior research that shows that by focusing on childhood behavioral interventions with parents, grandparents and guardians, there is tremendous potential for increasing injury prevention behaviors.[39]

The results of this study provide encouraging evidence that faith-based injury prevention programs are an exciting addition to the armamentarium in the battle to reduce injuries in underserved portions of the population. Although not every member of our target community of African Americans is an active member of a church, we feel that through a continued partnership with church

and community leaders our initiative will have an influence by changing the "culture of safety," thereby making it culturally unacceptable not to buckle up.

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