

Development of a Culturally Informed Child Safety Curriculum for American Indian Families

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Abstract American Indian (AI) children are disproportionately affected by unintentional injuries, with injury mortality rates approximately 2.3 times higher than the combined rates for all children in the United States. Although multiple risk factors are known to contribute to these increased rates, a comprehensive, culturally informed curriculum that emphasizes child safety is lacking for this population. In response to this need, academic and tribal researchers, tribal community members, tribal wellness staff, and national child safety experts collaborated to develop a novel child safety curriculum. This paper describes its development and community delivery. We developed the safety curriculum as part of a larger randomized controlled trial known as Healthy Children, Strong Families 2 (HCSF2), a family-based intervention targeting obesity prevention in early childhood (2–5 years). During the development of the HCSF2 intervention, participating tribal communities expressed concern about randomizing enrolled families to a control group who would not receive an intervention. To address this concern and the significant disparities in injuries and unintentional death rates among AI children, we added an active control group (*Safety Journey*) that would utilize our safety curriculum. Satisfaction surveys administered at the 12-month time point of the intervention indicate 94% of participants ($N = 196$) were either satisfied or very satisfied with the child safety curriculum. The majority of participants (69%) reported spending more than 15 min

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with the curriculum materials each month, and 83% thought the child safety newsletters were either helpful or very helpful in making changes to improve their family's safety. These findings indicate these child safety materials have been well received by HCSF2 participants. The use of community-engaged approaches to develop this curriculum represents a model that could be adapted for other at-risk populations and serves as an initial step toward the creation of a multi-level child safety intervention strategy.

Keywords Child safety · American Indian · Unintentional injuries · Culturally informed · Community-based participatory research (CBPR)

Introduction

Unintentional injuries are responsible for the most years of potential life lost before age 65, and mortality rates are highest among American Indian (AI)/Alaska Native children (CDC, 2012). Poverty, substance abuse, substandard housing, limited access to emergency medical services, and low seat belt use are important risk factors that may be associated with these high rates (Murphy et al., 2014). In addition to the adverse health effects of unintentional injuries, their economic burden underscores a critical need for prevention (Piland, 2007).

In this paper, we describe the development and delivery of a novel child safety curriculum collaboratively designed by academic researchers, national safety experts, and tribal researchers, community members, and wellness staff. We developed the curriculum as part of a larger randomized controlled trial called Healthy Children, Strong Families 2 (HCSF2), a family-based intervention targeting obesity prevention in early childhood (2–5 years). This trial was developed after pilot testing with four tribal communities in Wisconsin (Adams et al., 2012; LaRowe, Wubben, Cronin, Vannatter, & Adams, 2007). During the development of the HCSF2 intervention, participating tribal communities expressed concern about randomizing enrolled families to a passive control group. Therefore, the collaborative group developed a safety arm as an active control group in recognition of the significant disparities in unintentional injuries and death in AI communities and because it would likely not affect the primary and secondary outcomes of HCSF2 (i.e., body weight and healthy behaviors related to diet, exercise, stress, and sleep). The resulting HCSF2 intervention, developed using community-based participatory research (CBPR) methodology, is currently engaging five diverse AI communities nationwide (in Wisconsin, New Mexico, Minnesota, New York, and Montana) in a 2-year randomized trial consisting of an obesity-prevention arm and a safety arm. In this paper, we describe the development and implementation of the safety arm and participant feedback on the innovative HCSF2 child safety curriculum used in the safety arm.

Research Design and Methods

We deliver the HCSF2 intervention via a mailed curriculum with social networking support. Families are randomly assigned according to the child's body mass index (BMI) percentile into either the *Wellness Journey* (the obesity-prevention arm) or *Safety Journey* (the child safety curriculum arm described here) for 1 year. At the end of Year 1, families switch Journeys. Over the 2-year intervention period, all families receive 12 mailed *Wellness Journey* lessons and supplies covering nutrition, physical activity, stress, and sleep topics, as well as 12 *Safety Journey* lessons covering a range of early childhood safety issues that we describe here. The *Wellness* lessons are delivered in the same order starting with the same lesson, while the *Safety* lessons are linked to the month of enrollment due to some seasonally-based content. We previously demonstrated the efficacy of a mailed intervention in American Indian communities (Tomayko, Prince, Cronin, & Adams, 2016) and determined this approach to be the most resource- and cost-effective method for use in HCSF2 for both the *Wellness* and *Safety Journeys*.

Child Safety Curriculum Development

Available data, evidence-based best practices, and feedback from our community partners informed curriculum development. From the top eight major causes of injury-related death, we chose to exclude firearm-related, suicide, and homicide because our targeted child age group would be less likely to experience these issues. We added poisoning-related deaths, a leading cause of death among children ages 1–5 years. We also included various seasonal topics (warm/cold weather safety), holiday celebration safety, animal safety (e.g., stray dogs), all-terrain vehicle safety, and stranger danger based on partner feedback, for a total of 12 topics delivered by newsletter (Table 1).

The curriculum development team included academic researchers, tribal research and wellness staff, and national child safety experts from the Indian Health Service, and involved an iterative feedback process (Fig. 1). Injury prevention incorporates strategies on many levels, including primary prevention strategies to avoid an injury event and strategies to minimize injury once it has occurred; we included both approaches in our curriculum. For primary prevention, our materials focus on removing hazards in the home and educating parents and caregivers about the potential risk of common situations to prevent injury events. We also relied on evidence-based best practices related to minimizing injury once an event has occurred (e.g., child safety seats in a crash, smoke alarms in a fire, or bike helmets when cycling). Once we determined the topics and scope of the safety intervention, our process for lesson development included (1) creating a framework for each newsletter, (2) brainstorming lesson ideas and activities to engage both adult and child, (3) drafting each newsletter, (4) seeking feedback from community partners, (5) incorporating suggestions and modifying the materials, and (6) finalizing each lesson (Fig. 1). We used this participatory process to maximize early community input prior to the implementation of the HCSF2 intervention.

Table 1 Sample safety tips by topic for each monthly newsletter

Month	Newsletter topic	Sample tip/activity
January	Home safety	Take a tour of your home from your child's perspective looking for potential hazards and checking for safety. Better yet, have them come along and look for danger together
February	Choking/suffocation prevention	Take a small toy and see if it will fit through a toilet paper roll. The size of most toilet paper rolls is 4.5 cm, which is about the same size as a child's esophagus. If it fits through the tube, a child could swallow it and choke on it
March	Poisoning prevention	Never call medicine "candy" to get a child to take it
April	Stranger danger	Avoid putting your child's name on highly visible areas of clothing, school supplies, or school bags. A stranger might use your child's name to suggest that they know your child
May	Bike/pedestrian safety	A child is more likely to wear a helmet when you do, too. Hey Kids—don't forget to grab some crayons for Color Me Safe (picture illustrating looking before crossing a street) on page two!
June	Warm weather safety	Water is BEST! Don't substitute soda or juice as a proper beverage to prevent dehydration. The sugar and caffeine may actually speed up the effects of dehydration
July	Water safety	If a child is missing, always check the water first! Seconds count in preventing death or disability from drowning
August	Animal safety	If a stray dog approaches you—BE A TREE! Trees are boring to dogs. Be a tree and a dog will likely sniff you and then go away
September	Car safety	Never share seatbelts. It might seem like fun, but two kids should never buckle up as a pair
October	Halloween/ATV safety	Decorate costumes and bags with reflective tape or stickers to improve visibility (reflectors provided with lesson materials)
November	Fire safety	Smoke Alarms Save Lives! Place smoke alarms near bedrooms, the living room, and the kitchen. Have your kids take turns pressing the button to help you test the alarms once a month
December	Christmas/cold weather safety	When you rearrange your home or visit friends and family during the holidays, kids may be exposed to areas they didn't have access to before. Keep an eye out for potential trouble spots!

The main objective of the child safety lessons is to educate and enable caregivers to make safer choices for their family and to avoid unintentional injuries. Because the effectiveness of parental involvement has been documented in the field of childhood obesity prevention (Golan, Weizman, Apter, & Fainaru, 1998; Jurkowski et al., 2013), we sought to build on this strategy by engaging both primary caregivers and children. Therefore, we wrote the newsletters to inform primary caregivers but also to include activities, such as "Spot Something Hot" or coloring pages, to engage children with the materials. The tips and strategies, such as the examples provided in Table 1, are directed at caregivers and often also include information relevant to adults and older children to emphasize family safety. Each newsletter has three main components: safety precautions to prevent unintentional injuries, information to enable individuals to respond appropriately in the event of an emergency or to minimize injury after one has occurred, and a child-focused

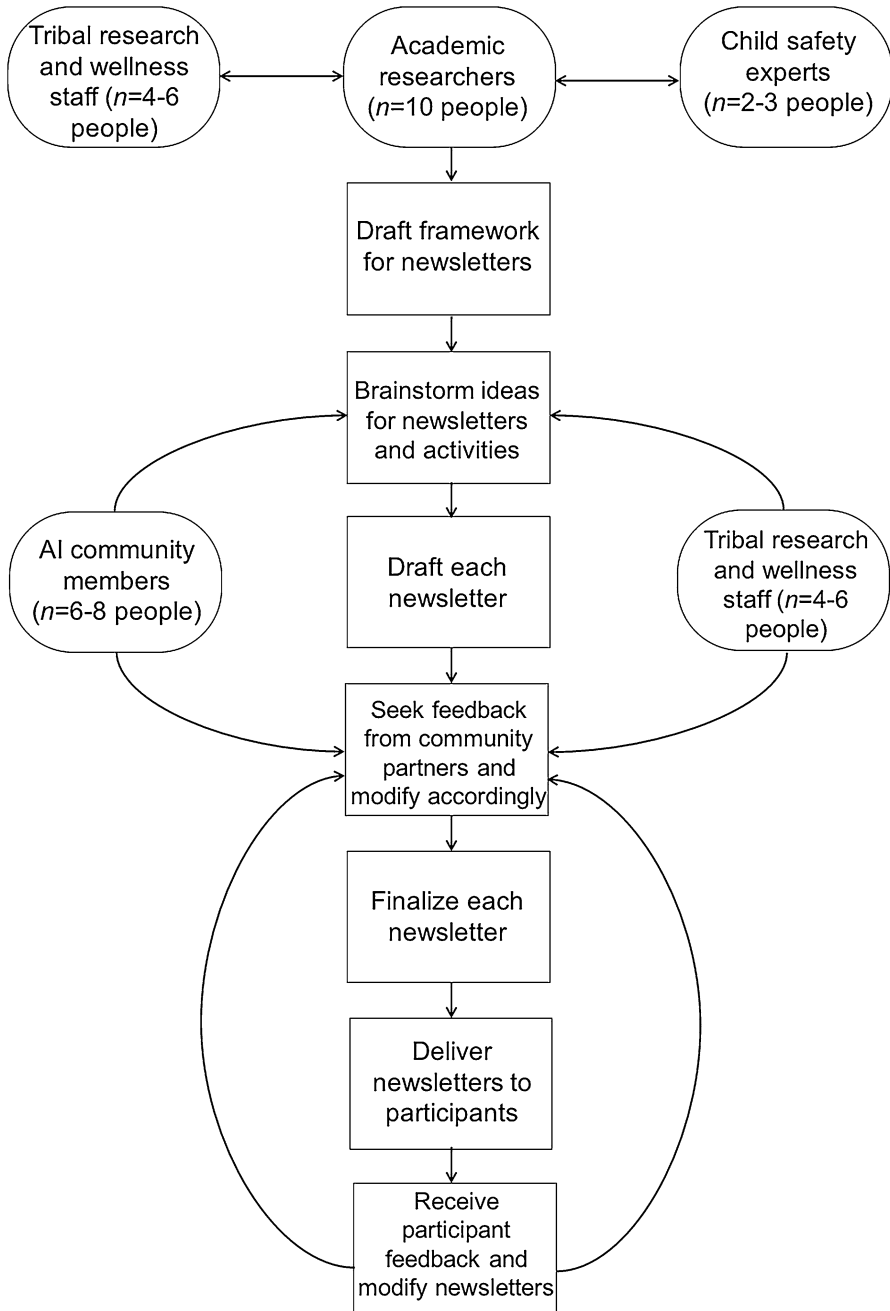


Fig. 1 Workflow for the collaborative development of the safety curriculum. This figure shows the workflow process from the inception through to feedback following implementation of the curriculum in participating communities. *Note.* The numbers in parentheses indicate the people involved in the iterative process. Because the number of people varied among rounds of revisions, ranges have been provided

activity. In addition, the newsletters often include a “myth busters” section, a “Did you know?” section, and other topic-specific tips. Each newsletter became part of the monthly lessons, which include other relevant informational handouts, such as child biking and pedestrian safety rules, and activities and coloring sheets for the children.

The HCSF2 *Safety Journey* also provides safety-themed incentives to participating families at multiple time-points. Upon enrollment, participants are given a Home Safety Guide to introduce various topics and tips; at 3 months, participants receive the book, “I Can Be Safe: A First Look at Safety” (Thomas & Harker, 2003); at 6 months, they are given a “Safety Backpack” that includes outlet covers, cabinet locks, reflector stickers, and band aids; and at 9 months, they are given “The Berenstain Bears Learn about Strangers” (Berenstain & Berenstain, 1985). Participants also receive a \$50 gift card (either to Wal-Mart® or the local grocery store, depending on the site) after completing testing at baseline, 12, and 24 months (for \$150 total) of the HCSF2 trial.

Importance of Community Partner Feedback

By involving local American Indian researchers, parents, grandparents, and other grassroots participants in the development and review of the lessons, we intended to identify and correct any sources of unintentional offense within the cultural belief systems or worldviews of our participating communities, thereby building trust and engagement. For example, during vetting of the Animal Safety lesson, we learned that an image of a snake was deemed taboo from the perspective of a belief system in which viewing a reptile could lead to ill health. In a belief system common across many tribes, animals have equal status and highly specific relationships to humans; thus, our use of animal images and references to them had to be carefully considered. In another instance, a cultural preference across community-based reviewers of the *Safety Journey* lessons was for the images of children to resemble their children as opposed to the dominant population, photos of whom were more readily available. One final example was the recommendation to be cautious in referencing mortality, as to talk or think about it could create an environment that could damage well-being and even lead to death. These examples and other important community partner feedback resulted in the development of a curriculum that was culturally informed and able to be used broadly across Native communities.

Survey Data Collection and Analysis

Participant Recruitment

Community-based site coordinators recruited participants through places that provide services to families with young children, including Head Start centers, tribal clinics, and community centers. Coordinators conducted recruitment in person and by using informational flyers in other community spaces. Inclusion criteria included being a primary caregiver who was willing to enroll themselves and a child ages 2–5 years. After enrollment, participants were randomized into the *Safety Journey*

or *Wellness Journey* after stratification by community and child weight status. The tribal council or health director (if applicable) in each of the participating communities approved the intervention. The University of Wisconsin, University of New Mexico, and active tribal Institutional Review Boards approved all study protocols prior to recruitment, and all participants provided written informed consent for themselves and the participating child. Recruitment began in January 2013 and was completed in March 2015.

Data Collection

Primary outcomes for the randomized controlled trial were adult and child weight status. In addition to these anthropometric measurements, local site coordinators collected survey data on health and safety behaviors at baseline and months 6, 12, 18, and 24 of the study (the content of these surveys and resulting data are not reported here). All participants were assigned a study ID number to ensure that data were collected, stored, and analyzed anonymously.

Participant Satisfaction Survey

A 6-question survey that included qualitative and quantitative measures assessed participant feedback to help us better understand how families were engaging with the safety curriculum. Five-point scales measured participant satisfaction and perceived usefulness of the materials, with responses ranging from ‘*very dissatisfied*’ to ‘*very satisfied*.’ Three independent investigators used a thematic analysis approach to analyze qualitative data from open-ended questions: “What have you and your child found to be most useful about the mailed Child Safety newsletter?” and “What else would you like to tell us about the Safety Journey?” We classified themes appearing consistently as major themes. We prepared descriptive statistics using SPSS (v23.0) and double-entered and verified all survey data using the REDCap electronic data capture tool (Harris et al., 2009).

Results

We completed baseline data collection for HCSF2 in March 2015. Of the 450 enrolled families, 225 were randomly assigned to the *Safety Journey* first, and an equal number were randomized into the *Wellness Journey* first. Of the *Safety Journey* participants, 211 (94%) of caregivers and 110 (49%) of children were female. The mean age of caregivers was 31 ± 9.1 years, 62% had completed at least some post-high school education, and 28% reported an annually $< \$5000$. Mean child age was 46 ± 13 months (3.8 years, within the target age range of 2–5 years). The survey findings reported here represent the 225 dyads randomized into the *Safety Journey*.

We administered the Participant Satisfaction surveys to all participants who remained in the study at 12 months ($N = 196$ of the 225 randomized into the *Safety Journey* at baseline). The response rate was 100% for remaining participants. The surveys indicated 94% were either ‘*satisfied*’ or ‘*very satisfied*’ with the child safety

newsletters. Additionally, 69% of the participants spent more than 15 min with the newsletters, and 83% thought the safety newsletters were ‘helpful’ or ‘very helpful’ for improving their family’s safety. For the qualitative questions “What have you and your child found to be most useful about the mailed Child Safety newsletter?” and “What else would you like to tell us about the Safety Journey?”—six major themes emerged from analyses of the responses: child engagement, increased family time, increase in content knowledge/reinforcement, awareness, action, and general satisfaction. Table 2 lists the percentage of responses categorized into each theme for the two questions and sample comments within each main theme to illustrate parental engagement with the material and their opinions of the usefulness of the information provided.

Discussion

In this study we describe a novel, comprehensive child safety curriculum developed for American Indian families with input from diverse community partners. We administered this curriculum as an active control arm of the Healthy Children, Strong Families 2 randomized controlled trial. The decision to employ an active control group was made with substantial community collaboration and represents a unique feature of this obesity prevention trial. Although financial and analytical resources primarily targeted the intervention arm (*Wellness Journey*), we provide evidence about the acceptance of this safety curriculum by families participating in the larger intervention trial. Our intent in this paper was to describe the development of this curriculum in partnership with its targeted communities to document the process for use in other community settings. The curriculum was well received by the participating families, and our qualitative data indicated positive changes in family time, awareness of safety issues, and action.

Numerous examples of successful community interventions have targeted specific safety topics, including increased use of child safety seats and seatbelts, reduced alcohol-impaired driving (Evans et al., 2001; Rivara, Thompson, Beahler, & MacKenzie, 1999), and increased use of smoke detectors (DiGiuseppi & Higgins 2000). A few programs have been specifically designed for use in American Indian communities (Kuklinski, Berger, & Weaver, 1996; Letourneau, Crump, Bowling, Kuklinski, & Allen, 2008), such as Safe Native American Passengers and Ride Safe targeting child passenger safety and the Sleep Safe program to reduce house fire-related injuries in children. However, these examples are single-topic public health programs that were not designed or evaluated as part of a research protocol. The literature lacks a comprehensive curriculum that includes both culturally informed information and a focus on child safety for AI families with young children.

We encountered some challenges during development of the safety curriculum. The enrollment of communities into the HCSF2 trial was staggered, and not all communities participated in curriculum development. However, we provided community stakeholders from each site the opportunity to review the curriculum and provide feedback prior to recruitment of participants in their community. Additionally, because the *Safety Journey* was an active control group in a larger

Table 2 Major themes regarding usefulness of the child safety curriculum

Major themes	What was most useful? (%)	What else would you like to tell us? (%)	Sample participant comments
General satisfaction	22.2	42.5	<p>Everything was very helpful and it was a good reminder for me and my family that safety comes first</p> <p>We found them good to use and work with every time they come in the mail</p> <p>We enjoyed the newsletters</p>
Increase in content knowledge/reinforcement	29.8	15.7	<p>There is a lot of interesting things that I did not know</p> <p>They help remind me of all the safety rules I could teach my children</p> <p>The newsletters help to reinforce the importance of safety and remind me to check the house for hazards and dangers</p>
Child engagement	21.6	8.0	<p>We found the example paperwork with images (i.e., examples/role playing of safety) to be most effective when discussing child safety in the home</p> <p>My son loves the activities that come in the mail and I love the safety tips!</p> <p>The most useful information was the Child Safety Newsletters with the most illustrations because it made it easier to explain and identify issues and concerns</p>
Increased family time	11.9	2.4	<p>I've learned a few new ways to keep my child safe. I've also been able to spend more time with my son; we've developed a much better relationship due to the activities</p> <p>The Newsletters gave us a way to bond and they gave my daughter a sense of responsibility</p> <p>They help me to spend time with my child by taking time to talk to them and teach them about safety</p>
Awareness	5.8	5.9	<p>The newsletters made me more aware and cautious about keeping my whole family safe</p> <p>The newsletters gave me new ideas and helped me take safety more seriously</p> <p>The child safety newsletters are VERY HELPFUL because it keeps us aware about our surroundings</p>
Action	6.6	3.5	<p>Helpful tips and how to use a routine in case of a fire, making sure there are smoke alarms, etc.</p> <p>My husband and I took safety measures in our home. We installed smoke detectors and covered outlets</p> <p>I really enjoyed the books and pages on CPR. My baby was actually choking and those sheets helped me to help my baby</p>

The full text of the two questions was as follows: “What have you and your child found to be most useful about the mailed Child Safety newsletter?” and “What else would you like to tell us about the *Safety Journey*?” The percentages indicate the total responses for each question that were coded within that particular major theme. An additional 2.1% of comments for Question 1 and 22.0% of comments for Question 2 could not be classified into any of the major themes

controlled trial rather than a stand-alone intervention, we were unable to allocate sufficient funds to conduct detailed analyses or further develop the curriculum beyond provision of educational materials and the periodic incentives described above. A main strength of the lesson development process and HCSF2 intervention was the utilization of an approach driven by both the community and by evidence-based practices related to child safety. The HCSF2 safety curriculum provides a model for safety experts and practitioners that may be adapted for other AI communities or aid in the development of comprehensive child safety curricula for other at-risk populations. Continued interest from the participating communities may prompt more robust curriculum and intervention development and evaluation in the future to address this critical public health and safety concern in American Indian communities.

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Compliance With Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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