



Sun Safety: Skin Cancer Education for Family Child Care

Grant Number: R44CA81947-03

Abbreviated Abstract

Most sun exposure occurs before the age of 20, and adoption of protective measures in childhood can reduce the lifetime incidence of skin cancer by 78%. This Phase II SBIR project has resulted in companion multimedia programs (Sun Safe Central™ and Adventures with The Shady Characters®) in both English and Spanish, targeting parents, home-based child care providers and the preschool children in their care. The programs will provide Web-based sun protection information and interactive tools for the providers, and downloadable sun protection games and activities for children 3-5 years old. In Phase II, we proposed to produce the remaining information, tools and graphic elements for both products, including: 1) expanding the scope of information for providers, 2) adding tools to help parents and child care providers integrate sun protection policies and practices into their daily routine and 3) teaching children age-appropriate sun protection behaviors through fun-filled activities. A two-group randomized field test will assess the programs' effectiveness at changing child care providers' and children's knowledge and practices, as well as providers' self-efficacy regarding implementing sun protection policies and practices for their child care business.

Primary Investigator

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Amelia Birney, MPH, CHES, served as team leader for Phases I and II of this project and has been instrumental in all aspects of product design, development and research for both Sun Safe Central™ and Adventures with the Shady Characters®. She is also the PI on Helping Out™, a Phase II SBIR grant for an Internet-based toolbox for lay cancer caregivers. Ms. Birney has served as the team leader, writer/editor, instructional designer and/or evaluation coordinator on several other multimedia patient education projects, including Breast Cancer: Your Decision Notebook®, Prostate Cancer: Your Decision Notebook® and COPD: Living My Best Life®. Ms. Birney has nine years of experience in quantitative and qualitative evaluation of health education materials and programs, with an emphasis on cancer prevention and cancer patient education. She also has developed a computerized patient information management system, and developed and implemented computer-training modules for non-profit health education and services programs. She has five additional years of experience in health communications related to cancer, reproductive health and HIV disease, including analyses of health research and policy issues written for non-researchers.

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Research Team & Affiliations

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Total Budget

\$1,223,258

Research Objectives

Aim 1: To research and produce informational content, tools and activities for providers in three remaining content areas.

Aim 2: To develop additional games and activities for children.

Aim 3: To adapt all informational content, tools, activities and games for Spanish-speaking users.

Aim 4: To test the effectiveness of the program to change knowledge, self-efficacy and practices about sun protection among Home-based child-care providers and the children in their care.

Theory/Hypothesis

Based on Social Cognitive Theory

Compared to child-care providers who receive a delayed intervention, providers who use Sun Safe Central™ and Adventures with the Shady Characters® in their child-care home will:

- Demonstrate increased knowledge about each of the sun protection messages (Reduce Sun Exposure, Cover Up, Use Sunscreen and About the Sun).
- Report increased self-efficacy in implementing sun protection practices in their child-care home.
- Demonstrate at least one change in sun protection practice or policies.

Compared to children in child-care homes that receive a delayed intervention, children in homes with Adventures with the Shady Characters® will:

- Demonstrate increased knowledge about each of the sun protection messages (Reduce Sun Exposure, Cover Up, Use Sunscreen and About the Sun).
- Engage in at least one change in sun protection behavior as reported by parents.

Experimental Design

The field test used a pretest/post-test control group design with delayed intervention for the control group. The experimental group used the program for four weeks under their own home child-care circumstances, with the pre-test taken immediately prior to distribution of any materials and the post-test administered four weeks after the pretest.

Final Sample Size & Study Demographics

Twenty child-care providers completed the full test protocol. Providers were all women. 65% were younger than 50 years and 50% of them college graduates. Race: 25% African American, 25% Caucasian, 5% Asian, 45% Other/Missing. Ethnicity: 55% Hispanic.

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Thirty-eight (38) children, ages 3–5 years, completed the full test protocol. 54% were girls. Race: 21% African American, 37% Caucasian, 42% Other/Missing. Ethnicity: 32% Hispanic.

Data Collection Methods

Pre and post-test data were collected from providers using written questions measuring knowledge, sun safety self-efficacy, self-reported practice, and parent-reported practice. Knowledge data were collected from children using verbal questions related to visual “flashcards” and actual clothing items. Children’s practice was measured via parental report. Children’s use of the program was captured by the CD-ROM.

Outcome Measures

Providers: knowledge (true/false/don’t know), sun safety self-efficacy (Likert-type scale), self-reported practice (Likert-type scale; Yes/No), parent-reported practice (Yes/No)
Children: CD-ROM usage (tracking data), knowledge (dichotomous), parent-reported practice (Likert-type scale; Yes/No)

Evaluation Methods

Pre/post surveys of child-care providers and parents; visual questions with verbal instruction for preschool-age children; usage tracking data

Research Results

There were no statistically significant differences between experimental and control groups in knowledge, self-efficacy or practice for either providers or children. However, there is some evidence of a trend toward more change in children's knowledge and behavior in areas in which they spent more time in the game.

Barriers & Solutions

Usability testing with young children was completed initially with several adults in the room, which clearly influenced the child’s gaming and learning experiences. A second round of testing was conducted to fine-tune the tools, using a single adult who was trained to offer minimal direction to the child. Other observers watched these tests via video from another room.

Recruitment of Hispanic child-care homes was accomplished with the assistance of a Hispanic woman, who approached providers by phone in Spanish with careful consideration of cultural standards around privacy issues.

Standardization of children’s responses to questions about safer clothing options was accomplished using custom-made shorts/pants and long-sleeve/tank shirts to minimize the bias based on color, design, size or other issues unrelated to sun safety that was identified in Phase I research.

Product(s) Developed from This Research

Central™ (www.SunSafeCentral.com) is a bilingual (English-Spanish) web site for parents and child-care providers with preschool children. The site includes information and educational activities to help protect preschool-age children and teach them about sun safety.

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Turning Cancer Research into Commercial Products



Adventures with The Shady Characters® (download from www.TheShadyCharacters.com) is an educational software program for children 3–5 years of age. Seven child-animal characters lead children through 10 games and activities that teach sun protection practices.

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