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A Community-Based Oral Health Self-Care Intervention for Hispanic Families

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Introduction

In the United States (U.S.), Hispanic children and other racial/ethnic minorities and those who live in poverty are at highest risk for poor oral health, caries, oral disease, and poor access to dental care (Dietrich et al. 2008; Dye, Li and Thornton-Evans 2012; Grembowski, Spiekerman and Milgrom 2009; Kopycka-Kedzierawski and Billings 2011). These disparities result from low access to dental care, lack of dental insurance, and incorrect knowledge about oral health self-care (Fisher-Owens et al. 2012; Hilton et al. 2007; National Institute of Dental and Craniofacial Research 2011). Many dental problems may be prevented by teaching caregivers how to care for their children's gums and teeth through

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Ethical Standards

This research was approved by the Institutional Review Boards of the corresponding academic institutions and complies with the current laws of the United States.

Conflict of Interest

The authors declare that they have no conflict of interest.

brushing, flossing, appropriate fluoride exposure, and reduced consumption of sugary foods and beverages (Pont, Huizinga and Beech 2008).

Culturally-appropriate health education interventions for Hispanic families with young children that improve oral health literacy, knowledge, and self-care practices are needed to improve oral health outcomes and narrow oral health disparities. This article describes the *Familias Saludables Sonrientes* (Smiling Healthy Families) intervention, a community-based, oral health education intervention designed to be culturally-appropriate for Hispanic families with children ages 5 to 7, which is being tested in an ongoing trial. Baseline data on demographic characteristics and oral-health related variables are presented for the currently enrolled families.

Methods

The Healthy Families Study, *Familias Saludables*, is a community-based participatory research study being conducted by academic partners, Nashville Latino Health Coalition, and Progreso Community Center in Nashville, Tennessee, U.S. An ongoing cluster randomized controlled trial (RCT), the study will enroll 272 Hispanic families with children ages 5 to 7 years old. One parent or guardian and more than one eligible child may enroll per family (i.e., children are clustered in families).

Using a two-group cluster RCT design, families are randomized after baseline either to the active weight gain prevention intervention, *Familias Saludables Activas* (Active Healthy Families), or to the alternative, non-equivalent comparison intervention (control group) focused on oral health, *Familias Saludables Sonrientes* (Smiling Healthy Families). Both interventions are delivered by trained, bilingual Hispanic lay community health promoters (CHPs), or *promotores de salud*, in a Hispanic community center. The protocols for this study were approved by the Institutional Review Boards of the academic institutions. A detailed description of the trial's research design and methodology is being published elsewhere (Zoorob et al., Manuscript under review).

Questions asked at baseline and follow-up assessments pertaining to the child's oral health self-care behaviors include frequency of brushing in past seven days, did child brush that morning, does child brush before bed, use of toothpaste with fluoride, and age of current toothbrush. Using descriptive frequency analysis, we report on the baseline sample characteristics for the first 240 families ($n=240$ parents and $n=284$ children) who have enrolled in the ongoing Healthy Families Study from May 2010 through January 2013.

Results

Intervention content and format

Our team developed the 12-month *Familias Saludables Sonrientes* oral health intervention in collaboration with community partners and expert consultants. The overall goals are to promote effective oral health behaviors in Hispanic children and parents and to inform them about how to access quality affordable oral health care in their community. The intervention is based on social cognitive theory (Bandura 1986) and behavioral choice theory (Lappalainen and Epstein 1990), to provide parents and children with cognitive and behavioral skills to perform the targeted behaviors, to encourage practice using these skills, and to strengthen their perceived competence in using these behaviors effectively. Previous research supports the use of CHPs as a culturally-appropriate strategy for community-based health interventions with Hispanic families (Ayala et al. 2010). The intervention consists of (1) four group sessions with parents and children (once a month during four months), (2) a coupon for an optional free dental hygiene exam and cleaning at a local university-based

dental hygiene clinic (provided outside of the study), and (3) four phone contacts and four mailed newsletters during eight months.

The format and content of each in-person group session are listed in Table 1. The sessions focus on the following topics: (1) the importance of keeping teeth and gums clean, (2) correct techniques for brushing teeth, (3) the importance of fluoride and flossing, and (4) the importance of going to the dentist. These topics are similar to those covered in the American Dental Association's (2011) *Smiles Smart* oral health curricula for preschoolers to Grade 3 children, the Missouri State Health Department (1993) *Show Me Your Smile* curriculum, and Colgate's (2010) Bright Smiles Bright Future program. The intervention approach puts a strong emphasis on experiential learning for children and parents.

Over the next eight months, the families receive monthly contact from the CHPs. Every other month, the CHPs mail four newsletters that reinforce the intervention messages and provide practical tips for caring for their children's oral health at home. The first three newsletters were adapted and translated to Spanish from newsletters previously developed by Beech and colleagues for a dental clinic-based intervention trial (Pont et al. 2008). The fourth newsletter is an illustrated flyer from the Children's Health Fund (2000). The topics of the four newsletters are: (1) Brushing and Flossing: Reasons to Smile, (2) Sports Safety and Dental Health, (3) Smoking: More than a Bad Habit, and (4) How Do I Keep My Teeth and Mouth Clean and Healthy. In the alternating four months, the CHPs call each parent and talk to him/her over the phone using a script to reinforce the information from the group sessions and newsletters, answer any questions, and give motivation and social support.

Baseline sample characteristics

As seen in Table 2, at baseline over half of enrolled parents were under 34 years old. Nearly all were mothers (96%), and all were immigrants, with about three-fourths from Mexico (results not shown). Over two-thirds of parents could only speak English a little or not at all. Almost two-thirds of parents did not finish high school. Three-fourths of parents reported a monthly family income of less than \$2,000. The sample had a slightly higher percentage of five year-olds than six and seven year-olds, while roughly even by gender (results not shown). Almost one-third of children spoke Spanish most or all of the time, and over half spoke English and Spanish equally as often. Over 9 in 10 children were born in the U.S..

Over two thirds of children reportedly brushed their teeth at least twice a day, as recommended, during the past seven days. About one quarter of children only brushed once a day, and 4% brushed less often than daily. Almost one quarter of children reported they did not brush their teeth in the morning of the day of the interview. Only 2 out of 5 children brushed before bed every day, while just half brushed before bed sometimes, and 9% said they never brush before bed. When asked if their child used toothpaste with fluoride, notably, over one third of parents responded they did not know what fluoride was or if their toothpaste contained fluoride. Over half of children used toothpaste with fluoride, while 9% did not. Over three-fourths children had changed their current toothbrush within the past three months, as recommended, including over half who had changed it within one month, but one out of five children had the same toothbrush for more than three months.

Discussion

Oral health disparities among children have been attributed to low socioeconomic status, lack of dental insurance, poor oral health literacy, and cultural beliefs based on incorrect information or limited knowledge (Fisher-Owens et al. 2012; Hilton et al. 2007). The need for regular brushing, flossing, and use of fluoride are not well understood by many caregivers and are commonly neglected (Hilton et al. 2007; Wiener, Crout and Wiener

2009), as was seen in our sample. The appropriate use of fluoride decreases the prevalence of dental caries among children (Iida and Kumar 2009). Negative dental encounters and personal dental fear among caregivers of children are other factors that create barriers to seeking oral healthcare for children (Hilton et al. 2007; Savanheimo et al. 2005).

The *Familias Saludables Sonrientes* intervention instructs families on the need for regular brushing, the importance and appropriate use of fluoride, and how parents can safely floss their younger children's teeth. The intervention emphasizes the importance of regular dental visits and what to expect at the dental office to reduce both parental and child anxiety around dental visits and to help normalize dental care as part of general health care (Soxman 2006).

Culturally-appropriate family educational interventions are needed to meet the cultural and linguistic needs of underserved and low-income ethnic minority groups and improve oral health self-care practices to prevent costly dental problems, especially for those with limited access to affordable dental care (Ayala et al. 2010). The *Healthy Families Sonrientes* intervention being tested in an ongoing trial will add to the scientific literature evidence on the efficacy of a community-based, family educational intervention focused on oral health prevention that was designed to be culturally appropriate for Hispanic families.

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Table 1

Content of *Familias Saludables Sonrientes* monthly group sessions

Activity	Session 1 Description	Session 2 Description	Session 3 Description	Session 4 Description
Objectives	<p>1 Get to know each other</p> <p>2 Introduce purpose and goals of <i>Familias Saludables Sonrientes</i></p> <p>3 Create awareness that teeth and gums need to be cleaned thoroughly each day</p>	<p>1 Explain difference between baby teeth and permanent teeth</p> <p>2 Demonstrate good brushing technique</p> <p>3 Explain the importance of getting rid of plaque and cleaning between the teeth</p>	<p>1 Demonstrate the important role of fluoride and identify ways to obtain fluoride</p> <p>2 Explain the importance of flossing</p> <p>3 Teach parents the correct way to floss their children's teeth</p>	<p>1 Encourage regular dental visits</p> <p>2 Prepare families on what to expect at the dentist's office</p> <p>3 Identify ways to protect teeth from injury</p>
Key Messages	The teeth should be cleaned every day to remove plaque.	The teeth should be brushed correctly at least twice every day to remove plaque. Plaque is often invisible. If we brush correctly and floss every day, we can remove most of it.	Fluoride benefits both children and adults. It helps teeth become stronger and more resistant to decay. Flossing daily is also important to remove food from between teeth	Going to the dentist is important to keeping teeth and gums healthy. We also need to protect our teeth from accidents and injury
Welcome/Intro (5 min)	Overview of Class, Attendance	Overview of Class, Attendance	Overview of Class, Attendance	Overview of Class, Attendance
Craft Activity (20 min)	Children make tooth toothbrush puppets	Children make Toothy Face Puppet	Children assemble booklet of oral health coloring pages	Children make Healthy Smiles Art, drawing faces with bright healthy smiles
Teaching Activity (20 min)	Importance of Keeping Teeth and Gums Clean Tooth Puppet Story using tooth puppets that were made in beginning of session Matching game: What We Use to Keep Clean	Review of key points from previous class Tooth Brushing – How to Brush Demonstration of proper tooth brushing technique using Mr. Clean Mouth model	Review of key points from previous classes Importance of Fluoride and Ways to Get fluoride Importance of flossing Demonstration of how to use dental floss using Mr. Clean Mouth model How to identify ADA seals on toothpaste other products	Review of key points from previous classes Importance of dental visits Virtual tour of dental clinic Demonstration of some of the dental hygiene tools used in dental clinics Protecting teeth from accidents and injury
Healthy Snack Video (15 min)	Show chapters from Dr. Rabbit and the Legend of Tooth Kingdom Video	Show chapters from Dr. Rabbit and the Legend of Tooth Kingdom Video	Show chapters from Dr. Rabbit and the Legend of Tooth Kingdom Video	Show Chippy Goes to the Dentist video
Brushing Practice (15 min)	Show brushing technique video clip Children practice brushing teeth with assistance from parent	Show brushing technique video clip Children practice brushing teeth with assistance from parent, using plaque disclosing tablet or mouth wash	Show brushing technique and flossing video clips Children practice brushing teeth with assistance from parent, using plaque disclosing tablet or mouth wash, plus children's fluoride mouth wash	Show going to the dentist song/video Children practice brushing teeth with assistance from parent, using plaque disclosing tablet or mouth wash, plus children's fluoride mouth wash
Game/Activity (10 min)	Keeping Clean Charades and Simon Says games	This Is the Way We Brush Our Teeth song	Power of Fluoride demonstration with eggs, vinegar and fluoride mouth wash	Graduation from Class

Activity	Session 1 Description	Session 2 Description	Session 3 Description	Session 4 Description
Conclusion/Wrap Up (5 min)	Give Parents Hand Outs: Importance of Keeping Teeth Gums Clean Weekly Brushing Chart (do at home)	Give Parents Hand Outs: How to Brush Your Teeth Weekly Brushing Chart (do at home)	Give Parents Hand Outs: How to Use Dental Floss Weekly Brushing Chart (do at home)	Give Parents Hand Outs: Dental clinics in the county with sliding scale or discounted fees
Incentives/Gifts	Tooth brush, ADA approved toothpaste Healthy Families T-shirts	Tooth brush, ADA approved toothpaste Toy or craft item	Tooth brush, ADA approved toothpaste Toy or craft item	Tooth brush, ADA approved toothpaste Healthy Families Water bottle

Note: Sources of materials that were adapted for this intervention:

Sessions 1-3 Dr. Rabbit videos: Colgate Bright Smiles, Bright Futures (<http://www.colgate.com/app/BrightSmilesBrightFutures/US/EN/Program-Materials/Kids-Games/Colgates-Tooth-Kingdom.cvsp>)

Session 1: Bays Mills Community College Head Start Dental Program (<http://www.bmcc.edu/Headstart/Dental/teethandgums.htm>); Crest/Oral B Educational Guides and activities for children (<http://www.dentalcare.com/en-US/dental-education/patient-education/patient-education-landing.aspx>)

Session 2: CDC's "Brush up on Healthy Teeth" (<http://www.cdc.gov/OralHealth/publications/factsheets/brushup.htm>); North Carolina Department of Health and Human Services (NCDHHS) oral health program (<http://www.ncdhhs.gov/dph/oralhealth>)

Session 3: Nova Scotia Dental Association (NSDA) oral health education database (<http://www.healthyteeth.org/index.html>), and the NCDHHS oral health program⁴.

Session 4: Video from Happy Ending Story Collection (<http://www.youtube.com/watch?v=2wTg10b1Of4>), and Interfaith Dental Clinic virtual tour (<http://www.interfaithdentalclinic.com/tour/tour-exterior>)

Table 2

Healthy Families Study baseline sample characteristics through January 2013, Nashville, Tennessee, U.S.

Variable	N	%
PARENTS (N=240)		
<i>Parent Age</i>		
18 – 24 years	15	6.5
25 – 34 years	120	52.2
35 years and older	95	41.3
Missing	11	
<i>Mother Country of Birth</i>		
Mexico	172	72.6
Other Latin American Country	65	27.4
USA	0	0.0
Missing	3	
<i>Parent English-Speaking Ability</i>		
Not at all	25	10.7
A little	135	57.7
Somewhat/Good/Very Good	73	31.6
Missing	6	
<i>Parent Education</i>		
High school degree or higher	86	36.3
Less than high school degree	151	63.7
Missing	3	
<i>Monthly Family Income</i>		
Less than \$1,000	43	18.9
\$1,000 –\$1,999	130	55.8
\$2,000 or greater	60	25.3
Missing	7	
CHILDREN (N=284)		
<i>Child Age</i>		
5 years [†]	123	43.3
6 years	90	31.7
7 years	71	25.0
<i>Child Country of Birth</i>		
Mexico	13	6.4
Other Latin American Country	6	2.1
USA	263	93.3
Missing	2	
<i>Child Usual Language Spoken</i>		
Mostly/Only Spanish	89	31.8
English/Spanish Equally	146	52.1
Mostly/Only English	45	16.1

Variable	N	%
Missing	4	
<i>How Often Child Brushed Teeth in Past 7 Days</i>		
3 times a day	18	6.4
2 times a day	177	63.2
Once a day	73	26.1
Some days	10	3.6
Once or twice a week	2	0.7
Missing	4	
<i>Did Child Brush Teeth this Morning</i>		
No	68	24.3
Yes	212	75.7
Missing	4	
<i>Does Child Brush Teeth Before Bed</i>		
No	25	8.9
Yes, Sometimes	142	50.5
Yes, Every day	114	40.6
Missing	3	
<i>Does Child Use Toothpaste with Fluoride</i>		
No	24	8.8
Yes	154	56.2
Don't know	96	35.0
Missing	10	
<i>How Old Is Child's Current Toothbrush</i>		
1 month or less	160	56.9
Longer than 1 month and less than 3 months	61	21.7
Longer than 3 months	60	21.4
Missing	3	

[†]This includes one child who was accidentally enrolled three weeks before turning 5 years old. Note: Some percentages total to more than 100% due to rounding error.