Early Childhood Caries in American Indian Children: DISPARITIES & PREVENTION

UCSF Dental Public Health Seminar Series, May 10, 2016
Tamanna Tiwari, MPH, MDS, BDS
Clinical Instructor
School of Dental Medicine
University of Colorado
American Indians

- 566 federally recognized tribes
- 5.2 million people
- 2% of population
- 325 reservations
- 22% of AI live on tribal lands
- Median age 30.8 compared to 37.5 for all US
American Indians - Disparities

Residents Below Poverty Level
- 29.2%
- Some reservations as high as 52%

Unemployment
- 13 to 80%
- 7 of 10 poorest counties in US are Indian reservations

Healthcare spending
- Less than VA
American Indians - Disparities
Compared to the US Population:

- Life expectancy is 5 years less
- Untreated Dental Caries in children 5 times higher
- Maternal Death Rates 2.4 times higher
- Diabetes mortality is 2.9 times higher
- Infant mortality rate is 20% higher
Health Care

• Indian Health Service
  – Directly provides care
  – Purchases some care for people living on and near reservations

• Tribal programs
  – Tribes can assume the management of their health care systems
  – Use federal money and sometimes tribal money
Example

• 7 dentists working in three clinics in an area the size of Connecticut
• 40,000 population
• US average dentist to population ratio is 1:1,600
• IHS 1:3,800 and worse
• Large area, high prevalence and severity of disease and few dental providers
American Indians

Accepted facts:

• Teeth get decayed in children
• Adults loose teeth
• You go to a dentist when you have pain or an infection
• Dentists are from other locations and ethnicities
American Indians

• Nationwide – 50% of native preschool kids have untreated decay
• Adults – 72% to 97% have untreated decay
• Pine Ridge – 84% and 97%
• Santo Domingo Pueblo – 48% and 72%
• Navajo – 70% of Head Start kids have untreated decay
What are we doing?
Mission

To work with AI/AN communities to conduct, facilitate, and disseminate the next generation of AI/AN oral health intervention research.
The Center for Native Oral Health Research (CNOHR)

• One of 3 Collaborating Centers for Early Childhood Caries funded by the National Institute of Dental and Craniofacial Research (NIDCR)
  – CU - American Indians and Alaska Native (AI/AN)
  – Boston University – Inner city housing
  – University of California at San Francisco – Hispanic

• The only one focused on the American Indian population
Current Research Studies

- Two culturally-sensitive RCTs of behavioral interventions
- One developmental project
- Community-based participatory research methodologies
Working With The Community

• Tribal government
  – tribal health boards
  – tribal research review boards
• Recruit at women's clinics, hospitals, immunization clinics, daycare centers, and schools
• Staff participates in health fairs, powwows, cultural & social events to engage the community
Interaction with Community
Community’s Contribution to Research

• Center Advisory Committee
  – Advises about present and future projects

• Community Advisory Board (CAB)
  – Shapes project on their reservation

• Key study staff
  – Native people working at home
Strategies Developed in Partnership

• Use of native language and native people on billboards and study material distributed to participants

• No ‘control groups’ – ‘enhanced community service group’ instead

• Community Oral Health Specialist approach in Navajo study

• Many more...
Approvals

Protocol approvals were received

1. National Institute of Dental and Craniofacial Research (NIH/NIDCR)

2. University of Colorado Institutional Review Board (COMIRB)

3. Navajo Nation Human Research and Review Board

4. Oglala Sioux Research Review Board

5. Indian Health Service Area Office
Outcomes

• Primary outcome
  – decayed, missing, and filled tooth surfaces in children (dmfs)

• Secondary outcomes
  – Caregivers oral health knowledge, attitudes, beliefs and behaviors
Basic Research Factors Questionnaire (BRFQ)

• BRFQ collects data on a number of potential risk factors
  – Caregiver and household characteristics
  – Caregiver dental knowledge, attitudes, beliefs and behaviors
  – Caregiver contributing factors affecting utilization
Caregiver and Household Characteristics

• Age
• Gender
• Highest grade attained
• Employment status
• Tribal affiliation
• Relationship to child
• Number of household members
• Annual household income
• Perceived adequacy of income
Caregiver Knowledge, Attitudes, Beliefs and Behaviors

- Oral health behaviors
- Self-efficacy (confidence that one can engage in good oral health behavior)
- Perceived importance of good oral health behavior
- Locus of control regarding child’s oral health
- Perceived benefits of and barriers to good oral health behavior
- Perceived seriousness of poor oral health outcomes for child
- Perceived susceptibility of child to poor oral health outcomes
Caregiver Utilization

• Health literacy
• Comorbidities
• Parent’s oral health status
• Alcohol use
• Distress
• Chronic stress
• Perceived discrimination
• Tribal identity
• Sense of coherence
• Social support
• Access to a working vehicle
Promoting Behavior Change for Oral Health in American Indian Mothers and Children
ENTERING

PINE RIDGE
INDIAN RESERVATION

LAND OF THE OGLALA SIOUX
CHIEFS
RED CLOUD BLACK ELK CRAZY HORSE

PUBLIC ACCESS AREA
HUNTING OR FISHING PERMITS REQUIRED

NO HUNTING WITHOUT TRIBAL PERMITS
Reservations Vary

• Oglala Sioux Tribe – The Lakota People
  – Southwestern South Dakota
  – Majority live below the poverty level
  – Health status is lower than US all races
Study Design

• Setting: On and Near Pine Ridge Reservation
• Sample: 600 Mothers and children (0 – 3 months)
• Recruitment: Completed January 2014
• Intervention: The use of motivational interviewing (MI) to encourage caries prevention behaviors in new mothers
• Timing: MI every 6 months x 4, Surveys and Dental Exams every year for 3 years
Study Hypothesis

This study will determine whether an intervention of enhanced community services plus MI compared with enhanced community services alone in mothers/caregivers of AI newborns will reduce dmfs measures of the children at ages 1, 2, and 3 years.
Study Materials

Help children brush their teeth until age six years, and then supervise them until age eight years. Young children are still developing coordination and may require your assistance to reach all surfaces (sides) of their teeth.

For young children with several teeth, use a small pea-size amount of fluoride toothpaste on a soft toothbrush when you brush their teeth.

Limit sweet drinks (juice and soda), sugary snacks, and junk food to special occasions.

For snacks, good choices are fruit, vegetables, cheese, or yogurt.

Your children learn by watching you. Show them that you value a healthy body and a healthy smile. Brush and floss your teeth daily.
Keep Tradition Alive by Being Healthy and Taking Care of Your Teeth and Your Family’s Teeth!
What is Motivational Interviewing?

Motivational interviewing (MI) is a behavioral intervention approach that involves informal assessment by the interventionist of the focal person’s stage of readiness for change, along with supportive guidance in choosing behavioral goals and strategies.
Motivational Interviewing with American Indian populations

- MI is complementary to the cultural values of AI/AN people; emphasizes listening, learning, and respect
- MI respects the sovereignty and self-determination of the individual and tribe
- MI method creates space to include spirituality and religious practices in the healing process of behavior change; asks the client what values are important to him or her
- MI is non-confrontational

One Sky Center Portland, Urban Health Indian Institute
MI Intervention

MI manual was developed by Kamilla Venner, a Native MI expert with emphasis on integrating AI and mainstream practices.

Four Native interventionists have been trained in the approach; all sessions are being recorded and are listened to and scored for fidelity.
Challenges in Recruitment & Retention

• Communication
  – Disconnected phone lines
  – Non-working phone lines

• Recruiting and retaining study staff

• Transient population

• Missed appointments

• Weather
## Baseline Results (n= 590)

<table>
<thead>
<tr>
<th></th>
<th>Less than HS</th>
<th>HS</th>
<th>Some College</th>
<th>College or more</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Health Knowledge</td>
<td>74 (13.4)</td>
<td>77.1 (12.8)</td>
<td>79 (11.6)</td>
<td>80 (11.2)</td>
<td>0.0004</td>
</tr>
<tr>
<td>Oral Health Behavior</td>
<td>67.5 (21.6)</td>
<td>67.9 (19.2)</td>
<td>63 (20.9)</td>
<td>63 (19.2)</td>
<td>0.08</td>
</tr>
</tbody>
</table>

The overall knowledge score represents the percentage of oral health knowledge items answered correctly. The overall behavior score represents the percentage of behavior items that were answered with an “adherent” response.
Baseline Results

• Internal oral health locus of control (OHLOC) was higher \( (p=0.002) \), and chance OHLOC \( (p<0.0001) \) and other OHLOC \( (p<0.0001) \) was lower in college educated mothers.

• Parental comorbidities such as depression \( (p=0.01) \), and anemia or other blood disease \( (p=0.02) \), have significant effect on the oral health behaviors.