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Dental attendance among low-income women and their children following a brief motivational counseling intervention: A community randomized trial

Christine A. Riedy [a, *], Philip Weinstein [a], Lloyd Mancl [a], Gayle Garson [a], Colleen E. Huebner [a], Peter Milgrom [a], David Grembowski [b], Megan Shepherd-Banigan [b], Darlene Smolen [a], Marilynn Sutherland [c]

[a] Northwest Center to Reduce Oral Health Disparities, Department of Oral Health Sciences, Box 357475, University of Washington, Seattle, WA 98195-7475, USA
[b] University of Washington School of Public Health, Box 357660, 1959 NE Pacific St, Seattle, WA 98195-7660, USA
[c] Klamath County Department of Public Health, 305 Main Street, Klamath Falls, OR 97601, USA

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ABSTRACT

This study tested a behavioral intervention to increase dental attendance among rural Oregonian low-income women and their children. It utilized a multi-site, single-blind, randomized trial design. Four hundred women were randomized into one of four conditions to receive prenatal or postpartum motivational interviewing/counseling (MI) or prenatal or postpartum health education (HE). Counselors also functioned as patient navigators. Primary outcomes were dental attendance during pregnancy for the mother and for the child by age 18 months. Attendance was obtained from the Oregon Division of Medical Assistance Programs and participant self-report. Statewide self-reported utilization data were obtained from the Oregon Pregnancy Risk Assessment Monitoring System (PRAMS). Maternal attendance was 92% in the prenatal MI group and 94% in the prenatal HE group ($RR = 0.98$; 95% $CI = 0.93–1.04$). Children's attendance was 54% in postpartum MI group and 52% in the postpartum HE group ($RR = 1.03$; 95% $CI = 0.82–1.28$). Compared to statewide PRAMS, attendance was higher during pregnancy for study mothers (45% statewide; 95% $CI = 40–50\%$) and for their children by 24 months (36% statewide; 95% $CI = 27–44\%$). MI did not lead to greater attendance when compared to HE alone and cost more to implement. High attendance may be attributable to the counselors' patient navigator function.
Trial Registration: ClinicalTrials.gov Identifier NCT01120041.

1. Introduction

The perinatal period is an important time to focus on improving oral health. Maternal care has been shown to disrupt oral transmission of tooth decay pathogens from mother to child and delaying infection of the child by the mother results in improved oral health (Köhler and Andréen, 1994). Prevention programs in pregnant women can be effective (Gomez et al., 2001). Nevertheless, many fail to see the importance of care during pregnancy, while others experience barriers (Singhal et al., 2014).

Klamath County, Oregon conducted a demonstration to promote attendance (Milgrom et al., 2008). Women received counseling by a dental hygienist through the health department, who also functioned as a patient navigator. Almost 56% visited the dentist compared to less than 9% statewide. Interviews confirmed the centrality of the navigator function (Le et al., 2009). There was a reduction in tooth decay among the children (Milgrom et al., 2010). Grembowski et al. (2008), in Washington, showed child utilization is higher when mothers have a regular source of care and mothers reported their children were healthier.

Barriers also exist to care for children (Garg et al., 2013) and programs have been developed to increase attendance and impact

* Corresponding author. Harvard School of Dental Medicine, 188 Longwood Ave, Boston, MA 02115, USA.
E-mail addresses: Christine_Riedy@hsdm.harvard.edu (C.A. Riedy), philw@uw.edu (P. Weinstein), llman@uw.edu (L. Mancl), garson@uw.edu (G. Garson), colleenh@uw.edu (C.E. Huebner), dfrc@uw.edu (P. Milgrom), grem@uw.edu (D. Grembowski), msb23@uw.edu (M. Shepherd-Banigan), darlenesmolen@gmail.com (D. Smolen), msutherland@co.klamath.or.us (M. Sutherland).

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the knowledge and attitudes of dentists (Grembowski and Milgrom, 2000). Investigators have attempted counseling interventions to encourage parents to begin care for their children by age one (Lee et al., 2004), establish a dental home (Brickhouse et al., 2013), and reduce childhood dental disease (Ramos-Gomez et al., 2012). One such counseling approach, motivational interviewing (MI), is a client-centered but directive counseling strategy. A brief MI approach (BMI), designed for use in primary care settings, has shown promise in prenatal care (Bogaerts et al., 2013) and within dental settings (Weinstein et al., 2006; Harrison et al., 2012; Broughton et al., 2013). Weinstein et al. (2006) randomized 240 parents of six to 18 month infants to a BMI intervention or HE. BMI took 45 min, included six follow-up calls and two postcards over a year, and focused on home oral hygiene and diet. After two years there was a 46% reduction in tooth decay in the BMI group. Although BMI resulted in reduced tooth decay, there were limitations; number and length of contacts differed between conditions, and MI delivery fidelity was not monitored. The active part of the intervention may have been the increased contact with the interventionist, whose role was similar to a patient navigator, rather than the intervention's content. This is consistent with the observed difference in the number of fluoride varnish applications between the groups and no difference among any of the measures of oral health behaviors. In another dental MI study, caregivers of African–American preschool children were randomized to one of two groups – MI plus oral health education DVD vs. DVD alone (Ismail et al., 2011). In contrast to the previous study, fidelity of MI interventionists was assessed and found to be weak, and the intervention had limited effectiveness on controlling dental disease.

To build on the successful community intervention in Oregon (Milgrom et al., 2008, 2010), address the aforementioned studies' limitations (e.g., behavioral intervention and counselor fidelity), and examine a maternal child health approach to reducing tooth decay, “Baby Smiles” tested a two-phase brief motivational counseling intervention to increase dental attendance among rural low-income women and their children. Additionally, a cost minimization analysis was conducted to compare the cost-effectiveness of the brief motivational intervention to health education to understand the cost implications of implementing this approach.

2. Study hypotheses

The study had three primary hypotheses: (1) women in prenatal MI would have a greater frequency of utilization than women in prenatal HE, (2) children of women in postpartum MI would have a greater frequency of preventive care by 18 months than children of women in postpartum HE, and (3) children of women in prenatal–postpartum MI would have greater preventive utilization than children of women in prenatal HE–postpartum MI. In this last comparison, we examined if providing mothers with MI for utilizing care for themselves would have a carryover effect and strengthen motivation to utilize care for their children. Eighteen months was chosen as the cut-off to evaluate if mothers met the recommendation to establish care for their child.

The study had secondary hypotheses; (1) as baseline readiness to change increases, the effects of MI on prenatal attendance and children's attendance for preventive care during their first 18 months of life will increase [Note: readiness baseline for prenatal attendance assessed prior to prenatal intervention and readiness baseline for children's attendance assessed prior to postpartum intervention], and (2) number of preventive home practices taken by mothers to prevent tooth decay in their children at 18 months postpartum will be greater among women in postpartum MI compared to HE. Exploration of the effects of other moderators (e.g., maternal depression, dental anxiety, oral health impact, and perceived stress) was assessed without *a priori* hypotheses.

3. Methods

Four hundred pregnant women living in four rural Oregon counties and eligible for Medicaid (Oregon Health Plan; OHP) were randomly allocated to one of four groups: (1) prenatal MI followed by postnatal MI, (2) prenatal MI followed by postnatal HE, (3) prenatal HE followed by postnatal MI, and (4) prenatal HE followed by postnatal HE. Descriptions of the design and intervention's fidelity monitoring have been published (Milgrom et al., 2013; Weinstein et al., 2014).

3.1. Participants and setting

Participation was limited to English-speaking women ≥15 years old in their first or second trimester who were eligible for Medicaid, and who planned to reside with their infants for the entire study. Study sites were four rural counties in Oregon (Douglas, Jefferson, Josephine, and Lincoln). Participants were clients at public health departments and were recruited by department staff and enrolled by Baby Smiles counselors. There was one counselor per county with the exception of Lincoln, which had a counselor at each of two sites.

University of Washington and Oregon State Public Health Division/Multnomah County Public Health IRBs approved the study. Participants gave informed consent.

Efforts were made to increase awareness and knowledge of community dentists and physicians. Materials were distributed and visits were made to local dental and medical groups. Managed dental care programs centralized appointments and trained personnel to prioritize pregnant women and young children. Community involvement resulted in incorporation of a patient navigator function in the counselors' roles. As part of the navigator role, counselors, after getting an affirmative response from participants about their desire to visit the dentist, assisted the women with making appointments. Navigator assistance was available for all study conditions. Oregon provided insurance coverage for pregnant women with family incomes below 185% of the Federal Poverty Level. The period of coverage was the duration of pregnancy plus two months. Coverage was available for children from birth.

3.2. Interventions

Intervention protocols were scripted to ensure consistency. At the end of the intervention session, counselors assisted both MI and HE participants who wanted a dental appointment.

3.2.1. MI interventions

Both the prenatal and postpartum MI interventions included written protocols and video-recorded “real life” examples to guide discussion and assure fidelity. MI interventions also included a fillable written plan for participants to take home after the session. As part of the intervention, follow-up phone calls were made to check-in on participants' plans, report unanticipated problems, and inquire about readiness to make a dental appointment if not previously made.

Prenatal phase: The intervention was delivered in-person by the counselor immediately after enrollment and baseline measures assessment. Counselors focused on barriers to care during pregnancy and identified participants' dental needs, dental risks, reinforced needs, and navigated barriers to care. Written prenatal educational materials from the National Maternal Child Oral Health