

Testing the Effectiveness of Dientes Fuertes, Vida Sana: A Promotores Training Program that Aims to Reduce Latino Childhood Tooth Decay in Low-Income Families

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Background

Childhood tooth decay is a significant public health problem in the United States (U.S.) and one of the country's greatest unmet health needs (Boyles, 2011). Not only can tooth decay produce lasting physical pain and emotional suffering for children afflicted with it, but it also has substantial societal ramifications, such as costing U.S. taxpayers hundreds of millions of dollars annually, mostly because of emergency room care for preventable tooth pain (Pettinato, Webb, & Seale, 2000; The Pew Center on the States, 2012). And though all children are susceptible to tooth decay, it is disproportionately evident in specific demographic groups. Indeed, Latino children and children living in poverty have greater amounts of tooth decay, more severe tooth decay, and more untreated decay (National Institute of Dental and Craniofacial Research [NIDCR], 2011). Latino children are twice as likely to experience tooth decay as non-Hispanic, white children (Barker & Horton, 2008; Dental Health Foundation, 2006). Similarly, children living in poverty are twice as likely to experience tooth decay as children not living in poverty (Edelstein, 2002) (Dental Health Foundation, 2006). Because Latino children are the largest demographic group of all children living in poverty in the U.S. (Lopez & Velasco, 2011), innovative methods to address childhood tooth decay in this vulnerable population are necessary.

To that end, with funding from the National Institutes of Health, we report in this research brief on an evaluation of Dientes Fuertes, Vida

Sana (DFVS), which translates from Spanish to English as "Strong Teeth, Healthy Life." DFVS is a multifaceted program that aims to reduce tooth decay incidence among Latino children living in poverty by training promotores de salud at Latino-serving community-based organizations (CBOs) on childhood dental health issues and how to respond to them. CBOs, or nonprofit organizations that provide health and human services at low or no cost, often use promotores as trusted peer educators to conduct outreach and promote health literacy in Latino communities. Promotores have demonstrated low-cost effectiveness in helping CBOs mitigate low-income, Latino families' barriers to care, including lack of insurance (Centers for Disease Control and Prevention [CDC], 2007; PEW Hispanic Center, 2009), language (Doty & Ives, 2002), and distrust of the mainstream health care system (Hirota et al., 2006; Huerta, 2003).

DFVS is guided by two hypothetical concepts. First, exposure to DFVS will significantly increase promotores' knowledge and positive attitudes about childhood dental health issues and their self-efficacy and intentions to conduct outreach, including the ability to spot problems and refer low-income Latino families to dental health services. Second, effective childhood dental health outreach will lead to greater dental health education for Latino families and connect families to dental services, allowing for the dual outcomes of prevention and treatment. In this brief, we test the first hypothesis. A subsequent brief will report on the second hypothesis.

Methods

To test the extent to which exposure to DFVS significantly increased promotores' knowledge, attitudes, self-efficacy, and intentions to act, we worked with 16 Latino-serving CBOs to serve as evaluation sites. We randomly assigned sites to a treatment or a control group. Promotores who participated in the study at sites in the treatment group received the DFVS training while those at control sites received no intervention. A key contact at each site helped us enroll participants into the study. Eligible participants were required to be at least 18 years of age, currently serve as a promotor(a) at a Latino-serving CBO, have six months or more of outreach experience, and have no formal training on child dental health. The study enrolled 176 participants, including 100 at treatment group sites and 76 at control group sites.

The study involved three key steps. First, participants at sites in the treatment and control groups took an online pretest survey that collected their demographic data and asked questions on their knowledge of and attitudes about childhood dental health issues and their self-efficacy and intentions to act on them. Second, participants at the treatment group sites were exposed to the DFVS training at their host CBO. Third, all participants took an online posttest survey, which was identical to the pretest survey except for the exclusion of demographic questions.

To analyze the survey data, we statistically combined survey responses into four outcome variables, namely, composite score changes in knowledge, attitudes, self-efficacy, and intentions between the pretest and posttest surveys. We related the outcome variables to the participants' exposure to the DFVS training (yes or no) and their basic demographic information and other explanatory characteristics using three statistical tests for each outcome variable, respectively. The first test is the bivariate relationship between exposure to DFVS and the outcome variable. The second test is that same relationship while controlling for respondents' demographic information. The third test follows a similar path, but it replaces the demographic information with measures of the respondents' other personal characteristics as multilevel control variables.

Findings

Participating promotores who received DFVS training showed positive changes in knowledge, attitudes, self-efficacy, and intentions to act on childhood dental health issues.

The evidence is strong and largely significant. For example, the mean percentage increase from pretest to posttest in correct responses on knowledge questions about childhood dental health was 21.8 percent among treatment group participants, a rate that is nearly eight times the average change for those in the control group (2.8 percent). The average composite score on positive attitudes about childhood dental health jumped by 17.2 percent among those exposed to DFVS, compared with 2.2 percent in the control group. The average composite score on self-efficacy increased most significantly, rising by 29.4 percent for treatment group participants, compared with only 4.3 percent among those in the control group. The weakest change, though still a positive one, among those in the treatment group occurred on composite intentions, which gained 12.3 percent from pretest to posttest, an average rate that is insignificantly different than the 8.9 percent increase experienced by control group participants. That there was a significant difference between the treatment and control groups on composite intentions at pretest, coupled with the relatively high rate of positive change among control group participants, which, without exposure to the intervention, may be due to chance or time, help to explain why the composite intentions difference shows no significant difference between the treatment and control groups.

DFVS training significantly builds knowledge among participating promotores, even while controlling for their individual characteristics.

We found a significant relationship between exposure to DFVS and changes in knowledge about childhood dental health issues that remained intact even when controlling for either the participants' demographics or other personal factors. In fact, there is a 99.99 percent likelihood that the significance of the relationships between DFVS exposure and change in knowledge in the three tested models is not by chance. From this perspective, we may say confidently that the exposure to DFVS produces significant knowledge boosts.

There is a positive connection between DFVS training and changes in positive attitudes and self-efficacy about childhood dental health issues.

The data suggest that, even when controlling for participants' demographic and other personal factors, DFVS exposure significantly influences the development of positive attitudes about childhood dental health. We find the same statistically significant relationships between one's exposure to DFVS and changes in self-efficacy to promote childhood dental health. Because

these models are statistically significant at the 99.99 percent confidence level, making the relationships unlikely due to chance, we may say quite strongly that DFVS exposure produces significant improvement in one's attitudes about childhood dental health and one's self-efficacy to promote it.

DFVS training has no significant effect on participating promotores' intentions to act on childhood dental health in their work.

Indeed, we found no statistically significant relationships between DFVS exposure and one's change in intentions to promote positive childhood dental health in any of the testable models. We suspect that the insignificance relates to the divergent average intention scores between the treatment and control groups at pretest and the relative strong gains in intentions reported by those in the control group, despite being unexposed to DFVS.

Implications

We find strong statistical support that DFVS generates highly positive changes in knowledge of childhood dental health and attitudes and self-efficacy about it, even when controlling for demographic and other personal characteristics. For these outcome variables, DFVS training is the singular most important predictor of change. The relationship between intentions to promote positive childhood dental health and exposure to DFVS is less clear, though it is statistically though insignificantly positive.

On balance, though, we may say confidently that DFVS is an effective training tool for promotores, improving their knowledge and skill set and making them better prepared for outreach efforts to low-income, Latino families on childhood dental health issues. And while DFVS stands as a credible option for widescale use, an important implementation question left unanswered in this brief is the extent to which CBOs in Latino communities recognize the scale and scope of childhood tooth decay as a public health problem. Therefore, accompanying the distribution of DFVS should be an effective effort to educate CBOs on its community need and programmatic effectiveness.

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