

Evaluating a Health-Equity Centered Oral Health Training for Community Health Workers

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Background

Tooth decay, the most common and preventable chronic disease among children in the U.S., afflicts nearly one of four Americans ages 3 to 5. The prevalence of tooth decay increases from 21% among children ages 2-5 to 54-59% among adolescents ages 12-19, which indicates a persistent pattern of oral health problems that worsens with age. Tooth decay,² especially when untreated, creates lasting and substantial physical and psychosocial consequences for children and adolescents.³

Minority and low-income populations have disproportionately high levels of tooth decay.^{1,4} Compared to non-Hispanic White children, Black children are less likely to receive preventive dental visits⁵⁻⁷ and experience more untreated tooth decay.^{6, 8-9} Moreover, children living in poverty are twice as likely as children not living in poverty to experience primary tooth decay.¹⁰⁻¹¹ Because of such childhood oral health disparities and health inequity, Guardians Receiving Information through Navigators training (GRIN) will equip community health workers (CHWs) with the knowledge and skills to deliver culturally appropriate pediatric tooth decay prevention and oral health outreach to low-resource Black guardians of children and adolescents from ages 0-18.

CHWs are uniquely positioned to provide high-impact outreach to low-resource and minority populations. GRIN aims to address guardians' low oral health literacy through a CHW training program. Many communities view CHWs as trusted sources for health information and CHWs may act as the link to better communication between patients and providers.¹⁸ There is a strong evidence base that CHW interventions effectively reduce health disparities and improve health outcomes^{1-3,15-17} in cost-effective ways.^{2-3,15-16}

Four main risk factors predict primary tooth decay and related negative outcomes among Black children and adolescents in low-resource households:^{4,12-14} 1) Guardians' low oral health literacy, 2) oral health care system navigation challenges, 3) shortage of dentists, and 4) structural barriers to keeping appointments. GRIN, a culturally competent online professional development course (course) to prepare CHWs to provide oral health outreach to low-resource Black guardians of children and adolescents, responds to these barriers and risk factors by increasing the CHWs' skills and the precursors of those skills, such as knowledge; positive attitudes and beliefs toward; and perceived self-efficacy and intentions to conduct oral health outreach to Black guardians and reduce health inequity.

Methods

Recruitment and study population

The GRIN evaluation was conducted from June 2022 to September 2022. The GRIN evaluation was a randomized pretest/posttest survey experimental design, where the treatment group was exposed to two GRIN modules: 1) Tooth decay impact on children and adolescents and 2) Preventive oral health care at home. The control group did not receive access to any materials between the pretest and the posttest. To recruit CHWs for the GRIN training, KDH Research & Communication (KDHR) partnered with four Area Health Education Centers (AHECs). Across the United States, AHECs serve communities in almost all 50 states with over 300 locations and a reach of 85% of counties in the United States.²⁵ AHECs are strategically located to ensure providers and communities receive access to education and services.

Inclusion criteria required that participants were at least 18 years of age, self-identified as a CHW, lived in the United States, conducted active outreach to Black parents or guardians of children and adolescents, had no previous oral health training, and had at least six months of field experience doing outreach.

Data Collection

There were 224 CHWs that met the inclusion criteria from the eligibility form and were enrolled in the study. The surveys were self-administered and completed on Alchemer, a secure online survey platform. After completing the eligibility forms, participants completed the consent form and were randomized into either the control or treatment group. Next, participants completed the pretest survey, which included questions on demographics, knowledge, attitudes and beliefs, self-efficacy, and intentions to conduct oral health outreach. Treatment group participants then reviewed the GRIN online modules while the control groups received no information. Participants completed the posttest survey, which included knowledge, attitudes and beliefs, self-efficacy, and intentions questions. Only the treatment group was asked course satisfaction questions. Data from CHWs who completed both the pretest and posttest were analyzed.

Findings

Study participation

Overall, 186 (83.0%) participants enrolled in the study after completing the consent form. Of the consented participants, 143 (76.9%) participants completed the pretest (64 control group and 91 treatment group). The participant total comprises of 107 participants who completed the posttest (45 control group and 62 treatment group). The majority of participants were female (88.5%), Black (42.7%), and non-Hispanic (72.6%).

Measures

We found positive findings across most GRIN evaluation measures: knowledge, self-efficacy, intentions to engage in oral health outreach in communities, and satisfaction with the GRIN training modules.

Knowledge about conducting oral health care outreach

- Between control and treatment groups: At the pretest, there was no significant difference in the knowledge of participants in the control and treatment groups. However, at posttest, the treatment group's mean score increased by 14.52 percentage points compared to the control group's mean increase of 0.56 percentage points. This finding is significant at the $p < 0.001$ level.

- Within treatment group: After receiving GRIN training, the knowledge mean score of the treatment group increased significantly from pretest (64.92% correct) to posttest (79.44% correct) at $p < 0.001$.
- Changes in knowledge were significantly associated with the following characteristics:
 - Age – participants aged 18-25 experienced significantly higher gains than participants aged 36-55.
 - Race – participants who were Black saw significantly higher gains compared to participants who were classified as other.
 - Paid/volunteer status – participants who were paid experienced significantly higher gains than participants who volunteered.

Attitudes about conducting oral health care outreach

- Between control and treatment groups: Among participants in the treatment group, positive attitudes about conducting oral health care outreach decreased by 0.73 (not statistically significant) percentage points on average, compared with a gain 0.53 percentage points in the control group.
- Within treatment group: While attitude composite scores decreased slightly from pretest levels (84.82% at pretest to 84.09% at posttest), this decrease was not statistically significant, suggesting that GRIN had neither a positive nor negative impact on participants' attitudes.
- Changes in attitudes were significantly associated with participant race – participants who were classified as "Other" experienced significantly higher gains than participants classified as Black.

Self-efficacy to conduct oral health care outreach to low-income Black parents/guardians of children and adolescents

- Between control and treatment groups: The average composite score on self-efficacy increased significantly for treatment group participants (an increase of 11.39 percentage points), compared with only 4.63 percentage points among participants in the control group, at the $p < 0.001$ significance level.
- Within treatment group: After receiving GRIN training, the self-efficacy of the treatment participants increased significantly from pretest (81.61% of highest self-efficacy rating possible) to posttest (93.00%) ($p < 0.001$).
- Changes in self-efficacy were significantly associated with the following participant characteristics:
 - Age – those aged 18-25 experienced significantly higher gains than participants aged 56-65
 - Time as a CHW – those who had been a CHW for six months or less experienced significantly higher gains than those who had been CHWs for three to four years.

Intentions to conduct oral health care outreach to low-income Black parents/guardians of children and adolescents

- Between control and treatment groups: While the treatment group gained 6.79 percentage points from pretest to posttest compared to the 11.31 percentage points gained by the control group, the rate of improvement is insignificant.
- Within treatment group: After receiving GRIN training, the intentions of the treatment participants to conduct oral health care outreach increased significantly from pretest (76.79%) to posttest (83.58%) ($p < 0.05$).
- Changes in intentions were not significantly associated with any participant demographics or personal characteristics.

Discussion

The rates of tooth decay are much higher amongst the Black community, and CHWs can help mitigate this health inequity by supporting Black guardians in ensuring that their children and adolescents receive the oral health care necessary to stay healthy. The GRIN prototype educated CHWs in the treatment group on the physical, psychological, and economic impact of tooth decay on children and adolescents and preventive oral health care that guardians can implement at home. Avoiding tooth decay may help prevent further disparities, children and adolescents will be less likely to miss school or require costly financial dental work,¹⁹⁻²³ and more likely to have higher self-esteem.

Preliminary evaluation of the GRIN prototype shows GRIN participation is associated with significant increases in knowledge, self-efficacy, and intentions of CHWs to conduct oral health outreach in their communities. The fact that the youngest category of CHWs experienced significantly higher gains in knowledge and self-efficacy reflects the ability of GRIN to adequately inform less experienced CHWs.

Findings indicate that the GRIN training has the potential to prepare CHWs to (1) conduct oral healthcare outreach, (2) emphasize the importance of oral health, and (3) encourage Black guardians to seek oral healthcare for their children.

As an evidence-based, culturally competent, and on-demand program, the GRIN program is a health equity tool with the potential to reduce the health disparity gap for the oral health of Black children and adolescents by increasing access to information through CHWs.

Moving forward, KDHRC will present GRIN findings at the National Oral Health Conference and Georgia Public Health Association Conference in 2023. We also hope to expand the GRIN program to reach more CHWs on a national scale.

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