

Community Health Paper II:

The Effects of Oral Health Education on Low-Income Individuals

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Planning

Health Problem

After noticing the lack of education, transportation, and financial resources within this community, we identified oral health as our primary health concern. Based on our pre-quiz results, 44% of participants reported they only brush their teeth once a day, and 25% reported they brush their teeth for one minute. This increases the amount of bacteria in the mouth, which can eventually get into the bloodstream, leading to infection.

Health Planning & Needs

The priority nursing diagnosis for our aggregate is Risk for Infection related to poor oral hygiene practices, limited access to dental care, and decreased knowledge. This was the selected diagnosis because poor oral hygiene increases the risk of bacteria that can travel into the bloodstream. Implementing education on prevention strategies can reduce the risk of infection and improve overall self-care. Education on proper oral hygiene is the most modifiable health concern within this population. One specific, measurable objective for this diagnosis is: After proper education, participants will verbalize and demonstrate appropriate oral hygiene practices, such as brushing twice a day for two minutes and using proper flossing techniques. Another objective is that after education, 75% of participants will be able to identify two signs of oral infection: persistent bleeding gums and tooth pain. These objectives provide clear outcomes that will help determine whether our intervention was effective.

Alternative Interventions

Prior to implementing our study to address deficient oral health knowledge among our aggregate, low-income adults attending the Samuels Mobile Dental clinic at ForKids, we considered several alternative interventions to fulfill the objective of oral health promotion. Time

and budgetary constraints served as limiting factors in the design of our research project. We were also unable to access our aggregate population for extended periods of time or follow up with them after discharge due to the walk-in nature of the dental clinic and widespread barriers to transportation faced by our aggregate. In line with existing research regarding dental promotion in homeless adults, who are included in and face similar challenges to our aggregate, we considered interventions to address resource scarcity and self-efficacy.

The first intervention we considered addressed the barrier of resource scarcity among our aggregate. Multiple research studies support the finding that the use of a hard-bristle toothbrush has a significant impact on the reduction of plaque deposits and mean tooth surface loss compared to the use of soft and medium-bristle toothbrushes (Rollinger, 2020). Additionally, brushing with a worn toothbrush is associated with significantly lower biofilm reduction compared to brushing with a new toothbrush (Ledder et al., 2019). The benefits of brushing with a new, hard-bristled toothbrush have also been substantiated by studies on the impact of brushing in the absence of water or toothpaste (Ledder et al., 2019). These findings support an evidence-based intervention aimed at communicating the importance of brushing twice daily regardless of access to toothpaste or water and obtaining a new hard-bristled toothbrush every three to four months, as recommended by the American Dental Association. The effectiveness of this intervention could be assessed by comparing the oral health of an experimental group against a control group, and could provide valuable information on the worthiness of implementing a program to promote regular replacement of hard-bristle toothbrushes as an impactful measure to promote oral health among low-income adults.

The second research intervention we considered addressed psychological barriers to adherence to a regular oral hygiene routine. The concept of self-efficacy, which is correlated with

a positive energy expenditure toward, and an increased likelihood of achieving, goal attainment, is a theoretical mediator for improved adherence to a regular oral hygiene routine (American Psychological Association, 2009). Research indicates that adults experiencing persistent poverty, such as those in our aggregate, are guided by environmental cues toward a present-orientation of thinking (Sheehy-Skeffington, 2020). This is significant in the context of goal attainment because a present-oriented mindset reduces an individual's ability to engage in long-term planning and motivation to achieve future-oriented goals. A survey to assess for a present-orientation of thinking and low self-efficacy among our aggregate could provide valuable insights for future interventions, which could include investigating the impact of therapeutic interventions designed to improve self-efficacy and executive function on adherence to a regular oral hygiene routine, compared to a control group.

Several local resources exist to address the underlying mechanisms of our two alternative interventions. Most homeless shelters, as well as local charities such as Village Family, Volunteer Hampton Roads, and Delta Dental of Virginia, can be used to obtain hard-bristle toothbrushes for plaque reduction. Free mentoring programs are also available to promote self-efficacy and executive function in a variety of contexts. For example, United Way of South Hampton Roads and the Hampton Roads Community Action Program offer mobility-mentoring programs to promote empowerment and self-sufficiency among low-income adults. We recommend providing individual resource recommendations based on location, eligibility criteria, health goals, and barriers to participation, such as a need for childcare or assistance obtaining transportation.

Intervention

Implementation

To provide oral health education, the clinical group created flyers that outline preventative oral care, recognizing early signs and symptoms of dental problems, the link between oral and overall health, and resources for dental clinics. Before handing out the flyers, participants completed a pre-quiz with questions related to their access to oral hygiene supplies, dental problems they are experiencing, how long and often they brush their teeth, how often they visit the dentist, and whether they eat sweets and junk food. The pre-quiz assessed the participants' current oral care habits and baseline knowledge. Then, participants received the educational flyers, and we talked them through the key points. After, participants completed the post-quiz that gauges whether participants will change any of their current oral care habits based on the educational session. This intervention involved both verbal and visual teaching methods, so that individuals with vision or hearing difficulties could still participate. The educational sessions occurred at several dental clinics hosted by the ForKids organization. Data was collected from 16 male and female participants, aged 27-65. This primary intervention aimed to increase oral health knowledge and encourage participants to implement changes to their current oral care routines that will improve overall health.

Because of the clinical group's participation at the ForKids dental clinics, it was clear that oral health is a challenge for low-income individuals in Southeast Virginia. From the pre-quiz responses, 44% of participants reported that they only brush their teeth once a day, and 25% reported that they only brush their teeth for one minute each time. In a fill-in-the-blank response, participants reported that they wanted to learn more about mouth care at night, bleeding gums, denture care, preventing decay, etc. The turnout at dental clinics and the pre-quiz responses

support the rationale to implement oral health education in this aggregate. The method of educational flyers was chosen because it is an effective, cost-friendly, and simple way to implement teaching and evaluate learning outcomes.

Literature Review

The population we chose to target for our intervention struggles with oral health more than the general population. Across the literature and research articles, higher rates of periodontal disease, dental caries, and ill health overall related to dental health are seen. Research demonstrates the need for dental health education in the homeless population. A few of the main areas identified in research articles on this topic include high levels of prevalence, barriers to care, and evidence on effective interventions. Social determinants of health, such as low income, limited resources, and limited insurance, have proven to be major barriers in this population practicing appropriate oral health practices.

Beaton et al. (2020) use a systematic review and meta-analysis to determine what community-based interventions are present for people currently experiencing homelessness. One of the gaps identified in this piece of literature was the role non-dental practitioners play in oral health care. Rollinger (2020) identifies more health and hygiene interventions for people experiencing homelessness. A gap identified in this piece of literature is the need for faster interventions that can aid in improving oral health. Sheehy-Skeffington (2020) identifies many ways in which having a low socioeconomic status can affect the way individuals make decisions and think. Wehby & Shane (2019) use surveillance system surveys to determine how the Affordable Care Act Medicaid Expansion has impacted dental visits in low-income populations. Heaton et al. (2022) provide statistics on the number of Americans not receiving the dental care that they need.

One of the largest gaps across research in this topic is the limit of long-term evidence and outcomes regarding interventions. It is important to determine the effectiveness of these interventions over time to truly understand sustainability. Improved quality of life following interventions and appropriate interventions seen in rural populations are areas that can be further evaluated. The research identified in this paper builds upon existing literature by demonstrating the need for interventions in this population and implementing these interventions appropriately and successfully.

Barriers

A number of barriers to oral health were documented among the ForKids aggregate that incorporated both individual-level and structural determinants of health. The first barrier of note is a lack of access to preventive and restorative dental care services, which is an ongoing issue for low-income adults, many of whom are relying on episodic or emergency dental care services only. This conclusion aligns with the existing literature that shows dental caries and periodontal disease are far more prevalent among the low-income population than higher-income households (Wehby, Lyu, & Shane, 2019).

The second barrier was a lack of oral health literacy. The data collected from the pre-quiz showed that 44% of participants brush their teeth only once per day, and 25% of participants brush their teeth for one minute or less. This indicates that there was a lack of knowledge about how to brush their teeth effectively. Additionally, participants expressed uncertainty about bleeding gums, proper denture care, oral hygiene at night, and early signs of dental disease. Collectively, these findings suggest that without some form of targeted intervention, many adults do not have even the basic knowledge to prevent dental decay. To address low oral health

literacy, our group used clear, simple language and avoided medical jargon during teaching, ensuring that all participants could understand the content regardless of literacy level.

The third barrier to oral health is structural barriers to accessing dental care, including transportation and childcare. The Mobile Dental Clinic reduces these barriers, as care is provided at the ForKids facility; however, both transportation and childcare programs continue to be contributing factors impacting access to timely dental care services. Individuals facing low income also experience significant financial barriers to oral health care. National survey data from the CareQuest Institute showed that among adults who had not seen a dentist in the past two years, 27% cited cost as the primary reason for avoiding care (Heaton, Sonnek, Schroeder, & Tranby, 2022)

The fourth barrier is that competing priorities associated with homelessness and poverty can hinder the ability to maintain oral health. In your clinical logs, families who had financial stressors or unstable housing arrangements prioritize immediate survival needs (i.e., food, safety, and shelter) over oral hygiene or dental appointments. This finding is consistent with existing research that shows individuals experiencing a homeless situation often view oral health as less important than their other survival needs (Beaton et al., 2020).

The final barrier to engagement includes psychosocial barriers, including embarrassment, dental anxiety, and previous negative experiences with dental care providers. During the clinical experience, some clients reported that they were uncomfortable discussing their dental needs because they were embarrassed about the condition of their teeth.

Together, these barriers highlight the need for accessible trauma-informed and culturally sensitive oral health education for populations experiencing poverty and homelessness. They also

support the use of simple, inexpensive, visually clear educational intervention-esque flyers, as were utilized in this project.

Evaluation

Evaluation Plan

To evaluate the effectiveness of the outlined intervention, we handed out pre-quizzes at dental clinics held on the ForKids property to assess the oral hygiene habits of our aggregate. After providing education about proper oral care, we handed out post-quizzes. The post-quiz consisted of 8 questions aimed at evaluating the efficacy of patient education. A study published in 2024 states that administering “practice tests” aids in learning outcomes (Akbulut, 2024). The rationale of the evaluation plan is that a pre-quiz can act as a practice test. Then, by providing education to improve oral health, the results of the post-questionnaire will show an improvement in general knowledge and, therefore, confidence. A research article published in 2022 found that poor education and poor health choices have a strong negative correlation (Viinikainen et al., 2022). By giving out the pre-quiz, we can assess a baseline, address the weaker points in a participant's oral hygiene habits, and reassess the progress with a post-quiz.

Limits of Evaluation

The method of evaluation relied on pre- and post-quizzes by the ForKids community. This presents several limitations that could have affected the accuracy of the results when the data was analyzed. These quizzes were self-report, which poses an increased risk of participants providing answers that they may think are expected and not based on their true reflection of their oral hygiene habits. Participants who experience embarrassment may give false answers due to social desirability bias and a lack of comfort level in giving personal information to new people. The administration time of the post quizzes, being immediately after hygiene education, could

skew results as well. This short time frame reduces the time to see if the education will be sustainable or if it is a temporary increase in oral hygiene recognition. To improve future evaluation, the quizzes could include more questions on all aspects of oral hygiene to get an even deeper understanding of their habits and barriers. Additionally, follow-up assessments could be extended over the course of 2-4 weeks or more to see if the intervention has become sustainable and to see which aspects need to be reinforced.

Recommendations

Based on the evaluation of the interventions that were implemented, there is a sequence of steps that can be taken to improve outcomes and promote continued knowledge advancement. To begin with, providing dental hygiene education more often and on a more consistent basis would encourage knowledge reinforcement and help the aggregate stay engaged in the education sessions. Also, implementing different educational methods, such as visual aids or physical demonstrations, may also contribute to improved oral hygiene and behavior change. Secondly, the evaluation emphasized the importance of creating a more individual approach when providing the teaching materials. Considering the range of ages and stages of development identified within the aggregate, modifying teaching methods for each of the members may improve comprehension and willingness to engage.

Another step that can be taken includes providing the different community partners with the teaching materials used for the education sessions provided to improve the accessibility of patient teaching. This correlates with increasing the frequency and consistency of the teaching to the aggregate population. Providing the healthcare professionals of the dental clinic with teaching materials integrates evidence-based practice with the researched methods of improving dental hygiene, which is being reinforced in the education that is given. Furthermore, this

method expands the reach of the intervention and encourages trust and participation between the aggregate population and healthcare professionals.

Continued tracking and client feedback should also be executed to allow for an ample amount of time to assess the effectiveness of the intervention. This gives the ability to change methods of the intervention for further research while also giving insight into whether or not the members of the aggregate find the education beneficial. Together, these recommendations can be used to ensure continued improvement and better research procedures for further analysis within this population.

Implications

The results of this project have meaningful implications for the ForKids aggregate, the broader population experiencing poverty in Southeast Virginia, and for community and public health nursing. For the aggregate specifically, the findings highlight the critical importance of maintaining consistent access to oral health resources, both educational and clinical. The presence of a free dental clinic available to ForKids residents and the general public serves as a valuable structural support, yet the pre-quiz data demonstrated that access alone does not resolve gaps in oral health literacy or daily self-care behaviors. The intervention showed that many participants lacked foundational knowledge about effective brushing techniques, nighttime oral care, denture maintenance, and early signs of dental disease. The positive engagement with the educational flyers and discussion suggests that pairing clinical services with targeted health education can enhance the overall impact of the dental clinic and support sustained behavior change.

At the population level, this project demonstrates how integrating preventive oral health education into existing community services can help reduce disparities in oral health outcomes

among low-income adults. While free dental services reduce financial and logistical barriers, they do not fully address the root causes of preventable dental disease, such as inconsistent hygiene habits, limited health literacy, and competing priorities related to housing insecurity and poverty. Educational interventions like this one offer a low-cost strategy to strengthen population-level oral health outcomes by promoting preventive behaviors and reducing reliance on emergency dental services. The model used here, combining accessible clinical care with brief, tailored educational encounters, can serve as a framework for other community organizations seeking to address oral health inequities.

The implications for nursing practice are quite significant, demonstrating that community and public health nurses play a pivotal role in bridging the gap between available resources and the lived realities of vulnerable populations. This project demonstrates how nurses can assess community needs, identify barriers, implement targeted interventions, and evaluate their effectiveness at the population level. The success of the educational intervention highlights the importance of trauma-informed communication and adapting teaching methods to accommodate variations in literacy, sensory barriers, and past negative healthcare experiences. Nurses are also positioned to strengthen interdisciplinary collaboration with dental providers, social service organizations, and community agencies to ensure that oral health promotion becomes an ongoing component of care rather than a one-time encounter. Furthermore, nurses can advocate for policies and programming that support sustainable access to preventive dental care, expand mobile dental services, and integrate oral health screening into routine community-based nursing assessments.

Overall, this project demonstrates that when free clinical services are paired with accessible, culturally sensitive oral health education, significant strides can be made toward

improving the oral health of populations experiencing poverty and homelessness. The intervention reinforces the broader public health principle that knowledge, access, and support must work together to create meaningful and lasting improvements in community health and confirms the essential role of nursing in advancing outcomes.

Conclusion

Reflection

Participating in this project offered meaningful insight into the oral health challenges experienced by low-income individuals and the broader impact of social determinants of health. One of the most important lessons learned is that oral health behaviors cannot be viewed separately from a person's life circumstances. Many clients prioritized housing stability, childcare, transportation, and safety over dental hygiene, which helped us understand how easily oral care can be displaced by urgent survival needs. Furthermore, this experience reinforced the importance of approaching patient education with empathy and without judgment.

This project also influenced our personal nursing practice by showing us how powerful simple and accessible education can be. For example, short teaching sessions supported by a clear, visual flyer can improve knowledge and motivate behavioral change. It has reminded us that nursing education does not require complex tools, and what matters most is meeting patients where they are, communicating clearly, and creating a safe space for questions. Moving forward, we will be more intentional about integrating oral health education into patient interactions, especially with those who may feel embarrassed or reluctant to discuss dental needs.

Finally, we have gained a deeper understanding of oral health as a public health issue rather than just an individual responsibility. The experience strengthened our commitment to promoting health equity and addressing barriers that prevent vulnerable populations from

achieving optimal health. This project has shaped our perspective as future nurses by highlighting the essential role of advocacy, community engagement, and trauma-informed care in improving health outcomes for underserved individuals.

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