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PROMOTING ORAL HEALTH KNOWLEDGE IN AFRICAN AMERICAN COLLEGE STUDENTS

Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Nursing Practice

By

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The Graduate School

Otterbein University

2015

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Date

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By

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2015

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ABSTRACT

Objective. This study aims to 1) assess African American college student's knowledge of oral self-care and healthcare access, 2) to provide education on how to prevent/decrease oral health disease through proper oral hygiene, and 3) help students identify resources available to promote positive oral health management behaviors.

Methods. The project is a quantitative descriptive study using a pre and posttest to assess African American college students' knowledge of oral health, oral hygiene and access to oral healthcare at a Historical Black College and University (HBCU) in rural Ohio. A pre questionnaire containing items regarding oral hygiene and oral health based on the recommendations of the American Dental Association (ADA) as well as questions about access to oral healthcare was distributed to African American college students to measure their knowledge. A demographic questionnaire was distributed. Students participated in a 20-30 minute oral health educational program based on the ADA's Mouth Healthy Program. A post-test was given 4-6 weeks after the initial pre-test by electronic survey to assess if any knowledge has been retained.

Results. 24 students completed the pretest questionnaire and attended the health educational session. 41% (10) of the 24 completed the posttest questionnaire 4-6 weeks following the intervention by electronic survey. Students completing the pre-intervention questionnaire answered 6 of the 10 questions pertaining to oral health with a passing grade of 60% or higher. Low scores, less than 60%, were noted on questions pertaining to energy drinks; flossing teeth; the color of healthy teeth, and the best way to prevent gum disease. Answers of 'don't know' were recorded on 50% of the questions with the highest response

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from the question pertaining to the best way to prevent gum disease at 21%. Thirty-eight percent of the participants knew where to go if they needed to be seen by a dentist and 67% had transportation. Student's oral health knowledge improved following the intervention as evident on the posttest by an increase in the percent of oral health knowledge questions answered correctly. I had ten questions; seven showed an increase in score, two a decrease in score and one showed no change. A decrease in score post-intervention was seen in questions pertaining to out growing tooth decay and white teeth being healthy teeth. The biggest decrease was seen in the question pertaining to out growing tooth decay. Post intervention, 30% said they knew where to go for dental care and 60% still had transportation.

Conclusion. An oral health program targeting African American college students at a Midwest college can increase their oral health knowledge which will hopefully lead to improved oral health behavior leading to better oral health.

PROMOTING ORAL HEALTH KNOWLEDGE IN AFRICAN AMERICAN COLLEGE STUDENTS

Introduction

Dental disease has been called a "silent epidemic" by the United States Surgeon General and ranks high in incidence among chronic health conditions (United States Department of Health and Human Service [HHS], 2000). Poor oral health and the consequences can lead to serious health problems and even death. Periodontal disease has been linked to heart disease, strokes, diabetes as well as preterm births and other pregnancy complications (Ahn, Burdine, Smith, Ory & Phillips, 2011; Hashim, 2012). Poor oral health is responsible for over 50 million school hours and 160 million work hours lost yearly and over \$110 billion in expenses (National Children's Health Foundation [NCHF], 2012; Cohen, 2013). Poor oral health disproportionately affects those from vulnerable and underserved populations. These populations include racial and ethnic minorities, low income, less educated, those living in rural and urban underserved areas, as well as the uninsured or publicly insured (Committee on Oral Health and Access to Services, (U.S.). 2011).

Background

More Americans have health insurance than dental insurance. Millions of people lack dental coverage and cannot afford to pay out of pocket for dental care. It is estimated that over 120 million people in the United States had no dental coverage in 2012 (Sanders, 2012). Low-income populations are disproportionately covered by Medicaid rather than private dental insurance. Dental benefits covered under Medicaid vary from state to state (Schrimshaw, Siegel, Wolfson, Mitchell, & Kunzel, 2011). In Ohio, there are over 2.4 million people covered under Medicaid (Ohio Department of Medicaid, 2014a). Ohio Medicaid does

provide dental coverage for its beneficiaries. The frequency and cost of covered dental services are age based. For example, preventive care for those younger than 21 is covered every six months and at no cost. Preventive care for those 21 and over is yearly with a \$3.00 copay (Ohio Department of Medicaid, 2014b).

The Patient Protection and Affordable Care Act signed into law by President Obama gave states the option to expand Medicaid. Ohio is one of the states participating in the expansion. As of April 30, 2014 there are almost 309,000 newly enrolled Ohioans into Medicaid (Bernard-Kuhn, 2014). These new Medicaid enrollees will now have dental coverage but they may face another barrier which is access. While Medicaid is required to provide coverage of dental services for all children enrolled, there is no mandate for private dental practices to accept Medicaid payment (Hall & Hall, 2013).

Adequacy of the dental workforce is another access barrier which plagues this population. The supply of dentists cannot keep up with the demand. There are over forty million people living in over 4000 dental Health Professional Shortage Areas (HPSA) throughout the United States. In order to alleviate the shortage, over 6000 more dentists would be needed (Health Resources and Service Administration [HRSA], 2013). If the dental shortage is not resolved, access to dental care will remain a barrier for the vulnerable and underserved.

Significance of the problem

Prevention

Oral hygiene should be an important component of one's overall health as oral disease does not discriminate and affects all age groups. Tooth decay is a common preventable problem across the life span (Center for Disease Control and Prevention [CDC],

2011). Bottled water, alcohol, sugary drinks, drugs, smoking and a poor diet, all contribute to poor oral health (Silk & Romano-Clarke, 2009). This can lead to oral disease potentially causing pain affecting one's ability to eat, speak, socialize as well as impact potential health problems (Wu, 2012).

Decreasing sugar and proper oral hygiene will help to prevent and decrease oral disease. To prevent gingivitis and other oral diseases, the American Dental Association [ADA] (2013) recommends not only tooth brushing but flossing as well. In investigating the oral habits of young adults, a common question asked was how often one brushes and flosses his/her teeth. Luebke and Driskell (2010) surveyed 196 undergraduate students age 18 and above. They found that 3/4 of students brushed their teeth twice a day and 1/3 flossed daily. Lu, Wong and McGrath (2013) who studied the risk indicators of oral health status of adults 18 year olds, found that 67.9% of the 324 young adults surveyed admitted to brushing their teeth twice daily whereas 80% of them did not floss. Roberts-Thomson and Stewart (2008) found that those who admitted to brushing their teeth less than twice a day had more 'precavitated' caries upon oral examination. In a study by Kojima et al. (2013) 71% of the 2087 young adults aged 18 and 19 surveyed, brushed their teeth twice a day. These results indicate that more education and intervention is needed to bring about an awareness of the importance of flossing and the role it plays in prevention of oral disease.

The ADA (2013) also recommends regular dental visits once or twice a year. Roberts-Thomson, Stewart and Do (2011) investigated factors that influenced young adults' aged 20-25 use of dental services. They surveyed 819 participants over two and a half years and found that 25% did not make follow up dental appointments after their initial baseline dental exam. Additionally, 33% of the participants only made an appointment if they had a problem. Difficulty paying for the dental services and no need for dental care were the

reasons cited most as to why there was no dental follow up. Regular dental visits can help to prevent oral disease or diagnose gingivitis early to prevent complications (ADA, 2013).

Role of the Healthcare Provider

While it is true that medical providers receive little training in oral health, the thought process is changing. In 2011, the Institute of Medicine (IOM) recommended increasing the role of nondental healthcare providers in an effort to lessen oral health disparities. Studies have shown that better integration and collaboration between healthcare providers and dentists will help to improve access to oral care. This integration and collaboration would prepare healthcare providers to include pertinent oral health practices in their overall health care and preventive services. This will result in proper treatment, prevention and referral for oral health problems (Cohen, 2013).

The application of fluoride varnish has been proven to be a safe and effective procedure to reduce cavities in children (Berger, Bachman, Casalone, Farberman & Fish, 2014). There is literature that suggests that the use of supplemental fluoride, in high risk adults, is also effective in decreasing dental caries. A systematic review of 17 articles to investigate if supplemental fluoride was effective in adults with moderate or severe risk of dental caries proved that the use of fluoride in the forms of rinses, paste gels and varnish in adults is an effective way to decrease dental caries (Gibson, Juraisc, Wehler & Jones, 2011). Training healthcare providers in the application of supplemental fluoride in adults appears to be one way of decreasing dental caries in adults.

Significance of Poor Oral Health to Healthcare

As previously discussed, one of the reasons dental coverage is lacking, especially in the poor and underserved is because of lack of access to care. Emergency rooms have

become the main source of care for low-income people with limited or no dental insurance when access to professional dental care is limited (Lee, Lewis, Saltzman & Starks, 2012). In 2009, over 800,000 emergency room visits were the result of preventable dental conditions (Dolgin, 2013). Most hospitals are not affiliated with dental schools nor do they have an on-call dentist (Hocker et al. 2012). The level of care received in the emergency room for dental complaints usually consist of antibiotics and pain medication with a referral to follow-up with a dentist (Lee et al. 2012). This level of care, although it is the best the emergency room can provide, is not comprehensive enough to avoid the serious sequelae that can arise from poor oral health (Cohen, 2013). Follow-up care with a dentist is difficult for the uninsured or those covered under Medicaid. While medical providers and emergency rooms are reimbursed for treating Medicaid patients with dental complaints, dentist are not required to see patients who are unable to pay for services (Wallace, Carlson, Mosen, Snyder, & Wright, 2011).

Significance of Poor Oral Health to Advance Practice Nursing

The IOM (2011) reports that oral health is a prevalent unmet health need, especially for the underserved and vulnerable populations. Dental caries is a preventable oral health disease that spans the life cycle and disproportionately affects the underserved and vulnerable (Dolce, Haber & Shelley, 2012). This population, which does not normally benefit from routine dental care, is most likely to receive their healthcare from advance practice nurses (Haumschild, Haumschild & Holloway, 2012). Advance practice nurses can play a role in decreasing oral health disparities, expanding access to care and improving oral health care for the vulnerable and underserved (Dolce, 2014).

Advance practice nurses providing holistic health care can help to decrease oral health disparities by focusing on prevention. They can provide complete physical

assessments, identify and enlighten patients of the risk of oral disease, as well as provide basic oral health information with diet and lifestyle changes (IOM, 2011). By providing oral screenings with complete physical assessments to high risk individuals, many oral diseases could be prevented or caught early (Haumschild, et al. 2012).

The application of fluoride varnish to the teeth of school age children is another measure nurse practitioners are using to help combat tooth decay, especially in rural clinics (Berger et al. 2014). The American Academy of Pediatric Dentistry (2012) recommends that fluoride varnish is applied every 3 months to children that are “high risk” for dental caries and every 6 months for all other children. The application of fluoride varnish is yet another way in which advance practice nurses can help to decrease health disparities and oral disease.

Significance of Poor Oral Health to African Americans

The CDC (2013), reports that oral health disparities have the greatest impact on African Americans. Despite improvements in oral health status and a decrease in tooth decay in the United States, oral health disparities continue to exist for people of color. African Americans are disproportionately affected by low socioeconomic status, low household income, lower educational levels and less or no access to dental services and oral hygiene products. They also have decreased knowledge of oral health and hygiene thus resulting in a greater frequency and severity of dental caries (Costa et al. 2012).

Zabos et al. (2008) studied 695 African American adults living in Harlem. The study sought to determine the prevalence of oral health complaints among African American adults in relation to social class and their access to oral health care. Of the 50 health questions on the questionnaire inquiring about their health status, problems with teeth and gums were cited the most. The study found that more participants were in agony from

dental problems than high blood pressure, asthma or diabetes. The study concluded that there is an unmet need to provide oral health care to this population.

Poor and underserved populations have a greater need of oral health care, but are less likely to receive it. Underserved populations face major barriers in accessing and improving oral health (Committee on Oral Health Access to Services, 2011). Lack of or no dental insurance is a major oral health barrier for this population. Studies have shown that people without dental insurance are two times more likely not to have a regular dental provider or receive routine preventive care than those with dental insurance (Chapin, 2009). Considering the previous statements, it is apparent that preventive oral health education is needed to help this population understand the importance of dental health and its effect on one's overall health and wellbeing.

Significance of Poor Oral Health and Medical Health

There is a relationship between one's oral health and overall health. Periodontal disease has been linked to heart disease, strokes, diabetes as well as preterm births and other pregnancy complications (Ahn et al.2011; Hashim, 2012). Studies have shown that people with diabetes who have a hard time controlling their glucose levels are more vulnerable to periodontal disease (Phillips, 2013). The literature also shows that people with periodontal disease are more likely to die from heart attacks and suffer from strokes more than those without periodontal disease (Soong, 2011). The importance of dental health and its effect on overall health cannot be overlooked.

Significance of Poor Oral Health to Young Adults

While many research studies have been done on the topic of oral health as it relates to children and older adults, there is a lack of research on oral health and young adults (Lu et

al. 2013; Kojima et al. 2013). It also should be noted that the majority of research done on this topic within this population has been done in countries other than the United States.

A common theme in the literature is that little is known about the oral health habits of the 18-25 year old population (Lu et al. 2013). Young adulthood is an important formative period in one's life as it is often a time of change. This is especially true if one is living on their own for the first time and has to be accountable for their personal health and wellbeing among other things (Kojima et al. 2013). Since poor health behavior in general can affect one's oral health, young adulthood is a perfect time to reinforce or reintroduce proper oral hygiene habits that will hopefully be implemented in their daily life. In order to accomplish that, the gap that exists in research regarding oral health behaviors and use of dentist from childhood to adulthood needs to be filled so that appropriate health promotion interventions can be developed.

The dietary habits of young adults were found to contribute significantly to their oral health behaviors. Their dietary habits are usually poor and consist of an increase consumption of sugary drinks and foods which have been linked to dental caries (Silk & Romano-Clarke, 2009). Research studies by Luebke and Driskell (2010) as well as Jamieson, Roberts-Thomson and Sayers (2010) examined the effect of dietary habits on oral health behaviors. Luebke and Driskell (2010) found that 2/3 of the 442 college students aged 18 and older, admitted to consuming drinks and foods high in sugar one to three times a week if not daily. Jamieson et al. (2010) noted that there was a greater occurrence of tooth pain reported among those aged 19-20 who consumed sugary drinks or foods daily or even a few days a week. While both studies stressed a need to decrease the amount of sugary foods and drinks consumed, Luebke and Driskell (2010) felt that health care professionals need to

assist individuals to develop behavioral patterns to decrease consumption of those foods and drinks.

Theoretical Framework

The theoretical framework for this study is health belief model which was designed by social psychologists Irwin M. Rosenstock, Godfrey M. Hochbaum, S. Stephen Kegeles, and Howard Leventha in the 1950s to better understand human behavior (Hayden, 2013). This model is used to motivate people to take helpful actions to prevent negative outcomes. The health belief model has helpful applications for health prevention and the development of health behavior interventions (Davis, Buchanan & Green, 2013). The health belief model is composed of six concepts that try to explain why people engage in prevention, screening and/or managing health conditions (Rosenstock, 1966).

The six concepts and definitions are as follows (Rosenstock 1966):

1. Perceived susceptibility- how likely someone believes they will get a certain condition.
2. Perceived severity- how serious one believes a condition and its consequences can be.
3. Perceived benefits- the belief that if they act on the recommendations the risk or seriousness of the condition will be decreased.
4. Perceived barriers- obstacles the individual thinks or feels prevents them from making a change.
5. Cues to action- factors which make someone take action
6. Self-efficacy- confidence in the ability to take action.

For an example of how this theoretical framework can be applied to oral hygiene education review see table 1.

Concept	Oral hygiene education
1. Perceived susceptibility	Student believes they can get an oral disease.
2. Perceived severity	Student believes that the consequences of poor oral hygiene are significant to try to avoid.
3. Perceived benefits	Student believes that recommended action of appropriate oral hygiene would benefit them –possibly by allowing them to get early treatment or preventing oral disease
4. Perceived barriers	Student identifies their personal barriers to appropriate oral hygiene (i.e., no toothpaste, no toothbrush, no dental floss, no dental insurance) and examine ways to eliminate or reduce these barriers (i.e., ask student health services for toothbrush, paste and dental floss).
5. Cues to action	Student views reminder cues to action in the form of posters, flyers and “fyi” email messages
6. Self-efficacy	Student receives guidance on where to go for dental care.

Table 1-Example of theoretical framework

Needs Assessment

The needs assessment consisted of looking at oral healthcare access in Greene County. In 2013, per the United States Census Bureau, the population of Greene County was 163,204. In Xenia, the closest city to the project site university, the population was 25,879. Per the Ohio Department of Health (ODH), in 2012 there were 74 licensed dentists in Greene County, 60 of which were primary care dentist. 21 of those dentists treat Medicaid patients. The ratio of Medicaid population of dentist who treat Medicaid patients is 1:122 and 1:8 people who reside in Greene County receive Medicaid benefits. In a 10 mile radius from the university, there are 4 dental offices which accept Medicaid. Of those four, three are accepting new patients.

Out of the 443 student records assessed for residence and insurance status, 54% are residents of Ohio but not Greene County and 46% were from out of state. In regards to

insurance status, 54% have private insurance, 24% have Medicaid (Ohio and out of state) and 21% have no insurance.

Transportation is also an issue for the students. The campus police reports that about 25% of the student apply for parking decals. This number includes those who reside on campus as well as commuters. While there is no local bus system in this area, there is transportation off campus and into town by Greene Cats. Greene Cats is a small public transportation service ran by Greene County. The service hours are Monday-Friday from 6:00 am to 6:00 pm. This transportation service will transport students into Xenia and other nearby cities. Greene Cats is available to students every 90 minutes from the student center at a cost of \$1.50 per trip (Greene County, n.d).

Lack of familiarity with the surrounding area and lack of transportation can be seen as barriers to oral healthcare for the students. Due to this possible barrier, a potential knowledge problem in regards to oral healthcare and access can be present.

Problem Statement

Decrease knowledge and access to oral healthcare in African American college students age 18-25 can contribute to significant morbidity and mortality resulting in future medical, financial and social burdens.

Purpose

The purpose of this project is to assess African American college students' knowledge of oral health and access to oral healthcare.

Project Implementation

Project Design

The project is a quantitative descriptive study using a confidential questionnaire to assess oral health knowledge and access to oral healthcare in African American college students. The project utilized an oral health and hygiene questionnaire developed by the student investigator. Content and face validity was obtained.

The demographic information of the sample was characterized by descriptive statistics. Measures of central tendency was used to described mean values of variables measured at the interval levels, and mode values of variables measured at the categorical level.

Project Objective

1. To assess students' knowledge of oral self-care and health care access.
2. To provide education on how to prevent/decrease oral health disease through proper oral hygiene.
3. Help the students identify resources available to promote positive oral health management behaviors.

Methodology

The project was a quantitative descriptive study which utilized a questionnaire to assess African American college students' knowledge of oral health, oral hygiene and access to oral healthcare at a Historical Black College and University (HBCU) in rural Ohio. A pre and post design questionnaire containing questions regarding oral hygiene and oral health based on the recommendations of the American Dental Association (ADA) as well as questions about access to oral healthcare was distributed to African American college student to measure their knowledge (see Appendix A). A demographic questionnaire was

also distributed (see Appendix B). Students then participated in a 30 minute oral health educational program based on the ADA's Mouth Healthy Program. It was the goal of the oral health informational session (see Appendix C) to assess and possibly increase the oral health and access knowledge of the students who attended. A post-test from the pre and post-test design was given 4-6 weeks after the initial pre-test by electronic survey to assess if any knowledge has been retained.

Sample

The sample (n=24) consisted of 19 (79%) females and 5 (21%) males all of whom were African American (100%). The majority of the participants were between the ages of 18-19. Forty-two percent (10) were freshmen. Sixteen (67%) had dental insurance and 19 (79%) were out of state residents.

Project Budget

Printing for educational materials: 270 copies (absorbed by university)

Recruitment inducements: travel dental kit, dental floss, mouth rinse \$90.00

Gift cards for door prizes or raffle \$100.00

Poster presentation: \$100.00

Total budget: \$290.00

Protection of Human Participants

Project was implemented in the fall of 2014. Approval for project design was received from Otterbein University IRB (see Appendix C) before applying to project site university IRB (see Appendix D). Once IRB approval was obtained from project site, implementation of project began.

A participant consent form was developed (see Appendix C). The consent included the purpose of the project, risk and benefits of the project, how the data will be utilized, contacts to call with questions or concerns, and participants rights.

Timeline

Project presentation took place August 2014. IRB application was submitted to Otterbein University for project design approval August 2014. Once project design was approved from Otterbein University, IRB application was submitted to university where project will take place. Project implementation took place from November-December 2014. This allowed for data analysis to be completed between December 2014 and February 2015. Final paper was written between February 2015 and March 2015. Final paper submitted to committee in March 2015. Presentation of final project took place in March 2015 and graduation on May 2, 2015.

Outcomes and Analysis

Instruments Used

Data collected for this project was conducted through self-administered questionnaires. Participants were provided the questionnaires upon their arrival at the health sessions and were asked to complete the survey and return it before the health session began. The survey consisted of questions regarding oral health/hygiene knowledge, access to oral health care and demographics (see Appendix D and E).

The survey collected demographic data including age, class rank, gender, ethnicity, permanent residence and whether or not participants had dental insurance. The questionnaire also contained a series of 10 true, false or don't know general oral health/hygiene questions as well as 2 questions pertaining to access to oral health care.

Email addresses were obtained to not only send the link to the post-intervention questionnaire done by an online survey tool to participants 4-6 weeks later, but also to link the pretest with the posttest.

Data Analysis

Descriptive statistics were used to describe, organize and summarize findings. Percentage distributions of the variables were used to measure distribution and central tendency was measured by the use of the mode. The author's initial plan was to use a t-test to see if there was any statistically significant difference between the pre and posttest scores. Since the basic assumptions for generalizability were not met, t-test was not performed.

A total of twenty-four students were recruited and consented to participate in the study completing the pretest and attending the educational oral health session. The pretest/intervention sample consisted of 100% African American students, 79% of which were female and 21% male. Forty-two percent (10) were freshman between the ages of 18-19. Seventy-nine percent (19) were from out of state and 67% had dental insurance. Forty-one percent (10) of the participants responded to the post-intervention questionnaire by online survey. The mode for both participants and responders for age and dental insurance was 18-19 years and dental insurance respectively. The responders group consisted of 30% freshman and seniors, 20% sophomores and 10% juniors. Fifty percent of the responders were residents of Ohio but not the county where the project site university was located and 50% had out of state residency. Detailed information pertaining to the study sample is shown in Table 2.

Table 2 Participant demographics and characteristics

Demographics and	Participants	Participants:	Responders	Responders
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characteristics	total: 24 N (%)	Mode	pretest total: 10 N (%)	pretest Mode
<i>Gender</i> Female Male	19 (79) 5 (21)	Female	9 (90) 1 (10)	Female
<i>Age</i> 18-19 years 20-21 years 22-23 years 24-25 years 26 years +	11 (46) 6 (25) 6 (25) 1 (4) 0	18-19 years	6 (60) 1 (10) 2 (20) 1 (10) 0	18-19 years
<i>Ethnicity</i> American Indian/Alaskan Native Asian African American Native Hawaiian/Pacific Islander Caucasian Other	0 0 0 24 (100) 0 0 0 0	African American	0 0 0 10 (100) 0 0 0	African American
<i>Classification</i> Freshman Sophomore Junior Senior	10 (42) 3 (12) 4 (17) 7 (29)	Freshman	3 (30) 2 (20) 1 (10) 3 (30)	Freshman and Senior
<i>Dental Insurance</i> Yes No	16 (67) 8 (33)	Dental insurance	8 (80) 2 (20)	Dental insurance
<i>Permanent Residence</i> Ohio (not Greene County) Out of state	5 (21) 19 (79)	Out of state	5 (50) 5 (50)	

Responses to questionnaire statements

The first objective of this study was to assess the students' knowledge of oral self-care and health care access. To fulfill this objective, a pretest on general oral health knowledge and health care access was given. Students completing the pre-intervention questionnaire answered 6 of the 10 questions pertaining to oral health with a passing grade of 60% or higher. As shown in Table 3, low scores, less than 60%, were noted on questions

pertaining to energy drinks; flossing teeth; the color of healthy teeth, and the best way to prevent gum disease. Answers of 'don't know' were recorded on 50% of the questions with the highest response from the question pertaining to the best way to prevent gum disease at 21%. Thirty-eight percent of the participants knew where to go if they needed to be seen by a dentist and 67% had transportation.

Table 3-Pre-intervention responses to questionnaire (n=24)

General Oral Health Questions	Correct answer N (%)	Incorrect Answer N (%)	Don't Know N (%)
1. Energy drinks don't cause cavities.	13 (54)	6 (25)	5 (21)
2. If I am not having pain my mouth there is no need to see a dentist.	21 (87)	3 (13)	0
3. You can outgrow tooth decay (cavities).	23 (96)	1 (4)	0
4. It is recommended to floss your teeth once a week.	10 (41)	11 (46)	3 (12)
5. White teeth are healthy teeth.	15 (52)	9 (38)	0
6. It is recommended to brush your teeth once a day.	16 (67)	8 (33)	0
7. It is recommended to see a dentist twice a year.	17 (71)	2 (8)	5 (21)
8. The best way to prevent gum disease is to remove plaque.	13 (54)	4 (17)	7 (29)
9. Poor dental health is linked to many serious diseases and conditions.	19 (79)	2 (8)	3 (12)
10. Toothbrushes should be replaced every 2-3 months.	21 (88)	3 (12)	0
Access questions	True	False	Don't know
1. I know where to go if I need to see a dentist while at school.	9 (38)	10 (41)	5 (21)
2. I have transportation to get to a dental appointment.	16 (67)	8 (33)	0

Four to six weeks after the completion of the oral health educational session, given in the form of instructions, demonstration of oral hygiene practices and lectures on how to prevent/decrease oral health disease through proper hygiene (second objective), students were sent an email link to take the post-test by electronic survey. As seen in Table 2, forty-one percent of the students completed the post-test. As seen in Figure 1 and Tables 4 and 5, there was an increase in the scores of

some of the post intervention responses. The score increase was seen in questions pertaining to energy drinks; visiting the dentist; flossing; and brushing teeth.

A decrease in score post-intervention was seen in questions pertaining to out growing tooth decay and white teeth being healthy teeth. The biggest decrease was seen in the question pertaining to out growing tooth decay. As seen in Figure 1 and Tables 4 and 5, the scores for this question went from 100% to 70% correct. There was a 10% decrease, from 80% to 70%, regarding the question of white teeth being healthy teeth.

The third objective in this study was to help students identify resources available to promote positive oral health management behaviors. Included in the educational session was contact information on community dental and transportation service. Prior to the health educational session Tables 4 and 5, 50% of the participants knew where to go if they needed to see a dentist and 60% had transportation. Post intervention, 30% said they knew where to go for dental care and 60% still had transportation.

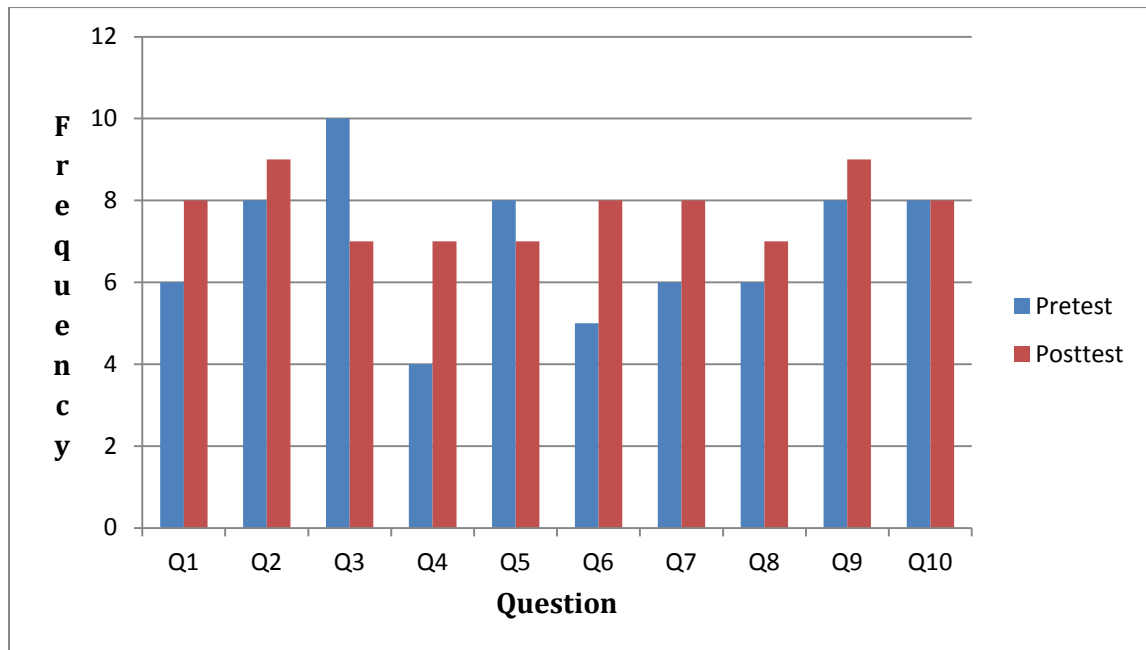
Table 4 Responders pre-intervention responses to questionnaire (n = 10)

General oral health questions	Correct answer N (%)	Incorrect answer N (%)	Don't know N (%)
1. Energy drinks don't cause cavities.	6 (60)	1 (10)	3 (30)
2. If I am not having pain my mouth there is no need to see a dentist.	8 (80)	2 (20)	0
3. You can outgrow tooth decay (cavities).	10 (100)	0	0
4. It is recommended to floss your teeth once a week.	4 (40)	4 (40)	2 (20)
5. White teeth are healthy teeth.	8 (80)	2 (20)	0
6. It is recommended to brush your	5 (50)	5 (50)	0

teeth once a day.			
7. It is recommended to see a dentist twice a year.	6 (60)	0	4 (40)
8. The best way to prevent gum disease is to remove plaque.	6 (60)	1 (10)	3 (30)
9. Poor dental health is linked to many serious diseases and conditions.	8 (80)	1 (10)	1 (10)
10. Toothbrushes should be replaced every 2-3 months	8 (80)	2 (20)	0
Access questions	True	False	Don't know
1. I know where to go if I need to see a dentist while at school.	5 (50)	4 (40)	1 (10)
2. I have transportation to get to a dental appointment.	6 (60)	4 (40)	0

Table 5 Responders post-intervention questionnaire results (n = 10)

General oral health questions	Correct Answer N (%)	Incorrect Answer N (%)	Don't know N (%)
1. Energy drinks don't cause cavities.	8 (80)	2 (20)	0
2. If I am not having pain my mouth there is no need to see a dentist.	9 (90)	1 (10)	0
3. You can outgrow tooth decay (cavities).	7 (70)	1 (10)	2 (20)
4. It is recommended to floss your teeth once a week.	7 (70)	3 (30)	0
5. White teeth are healthy teeth.	7 (70)	3 (30)	0
6. It is recommended to brush your teeth once a day.	8 (80)	2 (20)	0
7. It is recommended to see a dentist twice a year.	8 (80)	2 (20)	0
8. The best way to prevent gum disease is to remove plaque.	7 (70)	1 (10)	2 (20)
9. Poor dental health is linked to many serious diseases and conditions.	9 (90)	1 (10)	0
10. Toothbrushes should be replaced every 2-3 months	8 (80)	2 (20)	0
Access questions	True	False	Don't know
I know where to go if I need to see a dentist while at school.	3 (30)	5 (50)	2 (20)
I have transportation to get to a dental appointment.	6 (60)	2 (20)	2 (20)

Figure 1 Responders pre and posttest correct answers

Project Barriers

Project barriers included a delay in the Institutional Review Board (IRB) at the project site university due to change in leadership. Another barrier was the timing of implementation for the project. The delay in IRB approval pushed the project implementation back one month. Project implementation coincided with the Thanksgiving holiday and semester finals. Therefore, the post-test questionnaire by electronic survey was disseminated over the Christmas break; this could have possibly contributed to the small sample size.

Recommendations, Summary & Conclusion

Project Recommendations

In order to increase the generalizability of this project, the project should be replicated by expanding the sample sites. Expanding the sample sites will allow for a more accurate representation of the population and possible generalizability.

If this project were to be replicated, the author would suggest including a question asking when was the last dental visit and what was the visit for (routine cleaning or problematic) to assess if there is a correlation between oral health knowledge and dental visits. The author would also suggest removing or rewording the question about white teeth being healthy teeth as this seemed to be a misleading question.

Clinical Recommendations

The results should serve as an example a campus health center can take to design new programs and interventions to address the oral health needs of their students. Various factors identified from the pretest such as low scores on questions relating to energy drinks; flossing teeth; white teeth being healthy teeth; and best ways to prevent gum disease, can be used to guide interventions to improve oral health knowledge among the university students.

In order to increase student's access to the community oral health services available, there needs to be visible collaboration between the campus health center and community dental services. Students need to be made aware of these services and how to access them. Transportation and the ability to pay for services rendered, also plays a role in accessing oral health care. The university needs to make visible the transportation services which can be utilized by the students. Information needs to be displayed informing students of the times, routes and cost of the service. This can be accomplished by creating brochures and or posters that will be displayed in all the residence halls and other buildings on campus.

In order to ensure that students have medical/dental insurance, Health Navigators can be brought on campus to assist the students in applying for medical/dental insurance via expanded Medicaid or the Health Care Marketplace. The information also needs to be placed on the campus health center's website.

Lastly, the campus health clinic needs to incorporate oral health care information as well as screenings as a part of the campus health fairs.

Summary

This project investigated the oral health/hygiene knowledge and access to oral care in African American college students attending an HBCU. Oral health education was shown effective in increasing the student's knowledge in the general oral health questions as compared with the post testing. This is significant because not only was new oral health knowledge learned but also retained.

From these data it can be seen that the participants had a decent level of general oral health knowledge, given that the majority of the sample scored 60% or above on the oral health related survey questions. Because of the limitations of the data it cannot be assumed that all students have this level of general oral health knowledge. If this educational program was done in a different population, similar results might be seen.

The majority of the students participating in the project were from out of state. The students, who were residents of Ohio, were not residents of the county in which the project site university is located. Less than half of the students knew where to go if they needed to see a dentist and over 50% said they had transportation to a dental appointment. Lack of familiarity with the surrounding area can be seen as a barrier to oral healthcare for the students.

Limitations

The project had 2 limitations. The first was that the study sample was not representative of the student population on campus. There are about 2000 students who attend the university and the study sample comprised about 1.2% of the student body. Due to the small sample size, generalizations to the entire student body should be made with caution.

Another limitation was that the data was collected from a convenience sample; therefore the data may not be generalizable to the general student body at the project site university or HBCUs in general.

Conclusion

College students do not make oral health care a priority. Collaborations with community dental services can help to bring a much needed awareness to oral health to the student population. Increase in awareness will hopefully increase knowledge which will change behavior leading to better oral health. Better oral health will hopefully lead to a decrease in tooth decay and/or dental pain leading to a decrease in the number of missed classes by the students. This in return can lead to increase retention and graduation rates. Improved oral health can also lead to a decrease in morbidity and mortality decreasing future medical, financial and social burdens.

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APPENDIX

Appendix A: Oral Health Questionnaire

1. Energy drinks do not cause cavities.

☐ True ☐ False ☐ Don't know

2. If I am not having pain in my mouth there is no need to see a dentist.

☐ True ☐ False ☐ Don't know

3. You can outgrow tooth decay (cavities).

☐ True ☐ False ☐ Don't know

4. It is recommended to floss your teeth once a week.

☐ True ☐ False ☐ Don't know

5. White teeth are healthy teeth.

☐ True ☐ False ☐ Don't know

6. It is recommended to brush your teeth once a day.

☐ True ☐ False ☐ Don't know

7. It is recommended to see a dentist twice a year

☐ True ☐ False ☐ Don't know

8. The best way to prevent gum disease is to remove plaque.

☐ True ☐ False ☐ Don't know

9. Poor dental health is linked to many serious diseases and conditions.

☐ True ☐ False ☐ Don't know

10. Toothbrushes should be replaced every 2-3 months.

☐ True ☐ False ☐ Don't know

11. I know where to go if I need to see a dentist while at school.

☐ True

☐ False

☐ Don't know

12. I have transportation to get to a dental appointment.

☐ True

☐ False

☐ Don't know

Appendix B: Demographic Questionnaire

1. How old are you?

- ☐ 18-19 years ☐ 20-21 years ☐ 22-23 years
☐ 24-25 years ☐ Older than 25

2. What is your class rank?

- ☐ Freshman ☐ Sophomore
☐ Junior ☐ Senior

3. What is your gender?

- ☐ Male ☐ Female

4. What is your ethnicity?

- ☐ American Indian/Alaskan Native
☐ Asian ☐ Black/African American
☐ Native Hawaiian/Pacific Islander
☐ White ☐ Other

5. Do you have dental insurance?

- ☐ Yes ☐ No

6. Email Address: _____

Appendix C: Educational Session Outline

Oral Health and Hygiene Educational Seminar

Objectives:

1. Understand the significance of maintaining good oral health as part of overall health.
2. Demonstrate the capability to make good oral health choices to avoid oral health risks.
3. Assess the effect of safe and unsafe oral health behaviors.

Maintaining good oral health habits:

- Brushing

- Flossing

- Preventive dental care

- Healthy food

- Protecting mouth from harm (oral piercings)

Other behaviors harmful to your teeth and gums

- Smoking

- Eating disorders

Community services

- Greater Community Health Centers of Greater Dayton Dental Clinic

- Local dentist

- Transportation

- Affordable Care Act

Appendix D: Otterbein IRB Approval

INSTITUTIONAL REVIEW BOARD
RESEARCH INVOLVING HUMAN SUBJECTS
OTTERBEIN UNIVERSITY

☒ Original Review
☐ Continuing Review
☐ Five-Year Review
☐ Amendment

ACTION OF THE INSTITUTIONAL REVIEW BOARD

With regard to the employment of human subjects in the proposed research:

HS # 14/15-15

Ribar, McKelvey & Huff-Simmons: Promoting Oral Health Knowledge and Access ...

THE INSTITUTIONAL REVIEW BOARD HAS TAKEN THE FOLLOWING ACTION:

☒ Approved ☐ Disapproved
☐ Approved with Stipulations* ☐ Waiver of Written Consent Granted
☐ Deferred

*Stipulations stated by the IRB have been met by the investigator and, therefore, the protocol is APPROVED.

It is the responsibility of the principal investigator to retain a copy of each signed consent form for at least four (4) years beyond the termination of the subject's participation in the proposed activity. Should the principal investigator leave the college, signed consent forms are to be transferred to the Institutional Review Board for the required retention period. This application has been approved for the period of one year. You are reminded that you must promptly report any problems to the IRB, and that no procedural changes may be made without prior review and approval. You are also reminded that the identity of the research participants must be kept confidential

Date: 15 September 2014

Signed: 

Chairperson

OC HS Form AF

Appendix E: Central State University IRB Approval



Date: November 10, 2014

IRB #: CSU11032014

Date of IRB Approval: November 10, 2014

Date of IRB Approval Expiration: November 10, 2015

Title: Reporting Oral Health Knowledge and Access to Oral Healthcare in African American College Students

Dear Terry Huff-Simmons,

Please be informed that an expedited status review of your application has been conducted in accordance with the guidelines provided by the Office for Human Research Protections (OHRP) of the US Department of Health and Human Services (Protection of Human Subjects, 45 CFR 46.111 and 21 CFR 56.111)

The CSU Institutional Review Board Committee has approved your application under Central State University's Federal wide Assurance #00012013 and the following conditions:

- If any immediate changes are made, the IRB must be immediately notified and approval of the changes must be sought.
- The principal investigator must report to the IRB promptly any serious, unexpected and related adverse events and potential unanticipated problems involving risks to subjects or to others.
- The principal investigator must send any remaining IRB approvals to the CSU IRB once received.

If you should require additional information or guidance on any of the above matters, please contact Dr. Greta Winbush, Interim Chair of the CSU IRB Committee, at 937.376.6310 or by email at gwinbush@centralstate.edu

Sincerely,

Greta Winbush

Dr. Greta Winbush
Acting Chair/Associate Professor
CSU Institutional Review Board

Appendix F: Consent

Central State University

CONSENT TO PARTICIPATE IN RESEARCH

Promoting oral health knowledge and access to oral healthcare in African American college students

You are asked to participate in a research study conducted by Terri Huff-Simmons, MSN, FNP from Otterbein University and the Student Health Center at the Central State University. You were selected as a possible participant in this study because you attend Central State University and are between the ages of 18-25. Your participation in this research study is voluntary.

PURPOSE OF THE STUDY

The purpose of this study is to assess African American college students' knowledge of oral health and access to oral healthcare.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following:

1. Complete a demographic and pre-intervention questionnaire.
2. Participate in an oral health educational session lasting 30 minutes.
3. Complete a post-intervention questionnaire 4-6 weeks later through online survey.

POTENTIAL RISKS AND DISCOMFORTS

I do not anticipate any risks to the participants.

POTENTIAL BENEFITS TO SUBJECTS AND/OR COMMUNITY

Your participation in the study may include increased knowledge of oral health, oral hygiene and dental resources within the community.

The results of the study may help to identify any unmet dental needs that participants have and allow for interventions to be developed to meet those needs.

PAYMENT/COMPENSATION FOR PARTICIPATION

You will receive dental hygiene products in the form of a toothbrush, toothpaste, dental floss and mouth rinse for your participation in this study.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

Confidentiality will be maintained by entering data into a password protected statistical analysis program. Once data is entered into statistical analysis program and reviewed for accuracy, all hard copy forms will be shredded. Only the principal investigator and committee chair/faculty sponsor will have access to the data. No identifying data will be collected. All data will be presented in aggregate form. Results will be compiled and will not be able to be linked to individuals. Participant email addresses are only needed for participants to complete the online post-intervention questionnaire 4-6 weeks after educational intervention.

PARTICIPATION AND WITHDRAWAL

You may choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind.

IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact: Terri Huff-Simmons, principal investigator at thuff@centralstate.edu or at (937)376-6077 or Alicia K. Ribar, PhD, CNP, committee chair/faculty sponsor at aribar@otterbein.edu or (614) 823-1253.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal rights because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the IRB Chair at Central State University, 1400 Brush Row Rd, P.O. Box 1004, Wilberforce, Ohio 45384 or at (937) 376-6689.

SIGNATURE OF RESEARCH SUBJECT

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Subject

Signature of Subject

Date

SIGNATURE OF INVESTIGATOR OR DESIGNEE

In my judgment the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Name of Investigator or Designee

Date

Signature of Investigator or Designee

Date

