

Incorporating an Oral Health Curriculum in a Nursing Program

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September 2019

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Abstract

Oral health is an essential but often forgotten health care need. Oral health disparities are more prevalent in ethnic minorities, low income, and lower socioeconomic status populations. In most cases, oral health problems are not a priority until it becomes emergent. Barriers to receiving dental services are the cost of preventive care and treatment, the limited number of dental providers, and a lack of access to dental care. Nontraditional strategies are needed to address the growing health concerns that poor dental health create and explore different avenues in delivering dental services.

In reviewing the literature, several initiatives were explored. Building inter-professional collaborations between medical and dental providers can help to identify dental concerns and make appropriate referrals earlier. A consideration of training non-dental healthcare professionals to provide oral health preventative services would help to fill the gap of lack in dental services. Adding evidence based oral health curricula to nursing schools would increase the oral health knowledge and skills of nurses to provide oral health preventive services that can decrease dental caries and improve overall health.

The purpose of this pilot project was to increase oral health knowledge and skills of nursing students by incorporating an oral health curriculum into undergraduate and graduate-level nursing programs. Ten participants agreed to complete eight oral health modules that included a pre/posttest and a survey, during the Spring semester. The data analysis revealed an increase in all participants' oral health knowledge. Discussion of the results with implications for nursing practice and future recommendations for implementation are proposed.

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Chapter 1: Statement of the Problem

Throughout the United States, one of the major unmet health care needs is oral health. Poor oral health affects individuals not only physically but also mentally, financially, and socially. Poor oral health has also been found to have multiple negative health consequences and is linked to an increased risk for chronic conditions such as diabetes, stroke, and cardiovascular diseases (Mattheus & Shannon, 2015). Children who experience poor dental health have problems with eating and speaking as well as experience negative effects on their self-esteem and social interaction. Dental disease is one of the main reasons for absenteeism in school aged children and missed work for adults. With no state oral health division, lack of dental school, and no fluoridated water, the state of Hawaii has an extremely high rate of caries and one of the worst dental health outcomes in the nation.

Significance of the Problem

Dental caries is the most common childhood disease occurring five to eight times more often than asthma (Mattheus & Shannon, 2015). Caries is a preventable infection caused by microaerophilic aerobic bacteria and affects approximately 1 in 5 (20%) children aged 5-11 and 1 in 7 (13%) of those aged 12-19 years old (Centers for Disease Control and Prevention, 2016). The rates of dental caries are higher in low income families, immigrants, and low socioeconomic groups (Anil & Anand, 2017). Approximately 29% of children in the United States have untreated dental caries and unfortunately, in the state of Hawaii, caries rates are twice that of the national average with significantly more prevalence among Pacific Islanders, Native Hawaiians, and children (Deguchi et al., 2013). According to Harrigan et al., Asian and Pacific Islanders living in the state of Hawaii have a high correlation of systemic illnesses and oral health diseases (2005).

In a recent study conducted by the Centers for Disease Control and Prevention (CDC), the state of Hawaii ranked the second highest in the nation for periodontitis (51.0%) which is an advanced form of gum disease (American Academy of Periodontology, 2016). The study aligns earlier reports that gum disease is prevalent in the same areas that have high incidences of cardiovascular disease and diabetes. Gum disease predominantly affects ethnic minorities, those in lower socioeconomic status (SES), areas with limited access to dental care, and smokers (American Academy of Periodontology, 2016).

The Pew Charitable Trusts is a non-profit, non-governmental organization (NGO) that uses evidence-based research to improve public policy, inform the public, and to find solutions to the most challenging problems (Pew, 2016). The Pew Dental Health Campaign is a national effort that attempts to provide access to affordable preventive dental services and increase the number of dental providers. Dental report cards are completed annually for all 50 states and Hawaii has received an “F” for the past three years, prompting the state to reevaluate its dental public health efforts. The National Oral Health Surveillance System (NOHSS) recommends third graders as the target elementary school population. Third graders are typically used as the target population in oral health surveys because by that age more than half of all children are affected by dental caries and the data can serve as a source for comparison with statistics nationally (CDC, 2015).

Hawaii Smiles is an oral health initiative funded by a CDC grant that is the first in-depth oral health study findings on a sample population within the state. Schools were chosen in four counties (Hawaii, Maui, Honolulu, and Kauai) that had at least twenty students in a third-grade classroom and participation rate in the National School Lunch Programs (NSLP). After obtaining parental consents for dental examination, trained dental examiners were able to screen 3,184

students (57%) from 67 public and charter schools. The study revealed that 38% of third graders have dental sealants and 22% had untreated dental caries (Hawaii Department of Health, 2016). The researchers also determined that ethnicity, race and income significantly affect oral health disparities. The populations with the poorest oral health outcomes are were Native Hawaiians, Filipinos, Micronesian, and Pacific Islander children. The study reinforced the need for preventive and restorative dental care, dental screening and referral services. The findings from Hawaii Smiles (2016) revealed that of the third graders, who were screened, 23% needed dental care, more than 60% did not have dental sealants, and 7% required immediate dental care. If left untreated, dental caries can result in poor oral health consequences such as pain and infection which could lead to more severe problems and hospitalization. Children with infected and/or painful teeth have a harder time concentrating in school, may have difficulties with chewing and swallowing food, and getting an adequate night's sleep. Dental problems tend to cause more missed days of school. According to a study cited in the Hawaii Smiles Report (2016), children in the U.S., between the ages of 5-17 years, missed 1.6 million days of school (3.1 days per 100 students) due to dental problems. Absenteeism also affects their parents, who must take off from work to care for children or take them to the dentist. Social development is stunted, especially in early childhood, for children whose teeth are missing or damaged. This can have negative outcomes on a child's self-esteem and prohibit speech development.

The cost of dental care in the United States was \$124 billion in 2016 (American Dental Association, 2017). In the state of Hawaii, \$8.5 million was spent on hospital charges for dental problems most of which were preventable (Hawaii Department of Health, 2016). According to Rugg-Gunn (2013), cost of treatment for oral diseases exceed those of cancer, stroke, dementia, and heart disease but is preventable using fluoride.

The state of Hawaii does not utilize water fluoridation and as a result, it has the lowest fluoridation rates in the nation. Preventing caries without community water fluoridation is costlier for Hawaii residents. Instead, fluoride must be delivered through product purchases and prescribed in multi-vitamins. Brushing with fluoride toothpaste at least twice a day and visiting a dentist regularly are other ways to get the recommended fluoride. Dentist visits should be initiated early and fluoride supplements should be started when a child is six months old. Fluoride varnish and dental sealants are preventive measures that dentists can perform to reduce the incidence of caries. Providing education to the child and the family on good eating habits such as avoiding sugary foods and drinks and promoting good oral health practices is important. Nontraditional strategies such as telehealth dentistry and engaging community participation in research which includes obtaining more data on minority populations that live in Hawaii are needed to address this growing health concern.

There are multiple studies that support the need for inter-professional strategies to improve oral health. There are approximately three million registered nurses (RN) working in the United States that can provide and integrate oral health promotion and disease prevention in their nursing practice (Dolce, Haber & Shelley, 2012). To achieve that, Dolce and colleagues (2012) recommend that nurse educators and faculty incorporate evidence based oral health curricula into their nursing programs. The study done by Easa et al. (2005), discussed the need for collaboration to create oral health programs and community based oral health research since there is no dental school in Hawaii. Vece et al. (2016) conducted a study that implemented strategies such as integrating primary healthcare and oral care to reach the most vulnerable populations and their families resulting in improved health outcomes. Building the capacity of non-dental healthcare professionals such as RNs and advanced practiced registered nurses

(APRN) will increase the oral health services to individuals using such a strategy. Oral health conditions can then be identified, and early dental referrals can be made.

Problem Statement

Oral health disparities are more prevalent in ethnic minorities, low income, and lower socioeconomic status populations. Poor health outcomes have a direct correlation to the lack of knowledge by the patient, family or health care provider (Liu et al., 2017). Patients may lack the knowledge of oral care such as proper brushing technique and preventive care (dental checkups). Culture, beliefs, and lack of knowledge can influence oral health practices in families. Many healthcare providers receive minimal or no oral health education or training during their schooling or in their practice (Mouradian et al., 2003). Lack of oral health care not only leads to an increase in dental problems but also to poor overall health outcomes.

Oral health knowledge acquisition by healthcare providers empower implementation of interventions, such as fluoride varnishing, that lead to improved oral health outcomes. With the limited number of dental providers, interventions within primary care practices are a way to address oral health needs in vulnerable populations. Inter-professional strategies for medical and dental providers need to be created to alleviate the significant oral health disparities among low income children and ethnic minority (Braun & Cusick, 2016).

Project Goal

The purpose of this project is to increase oral health knowledge, skills, abilities, and interventions of nurses in primary care by integrating an oral health curriculum into undergraduate and graduate-level nursing programs. By integrating the *Smiles for Life* curriculum and completing the oral health modules, the outcomes anticipated are the Bachelor of Science in Nursing (BSN) students will be able to competently provide oral health education on

hygiene practices and diet. The Doctor of Nursing Practice (DNP) students will demonstrate competence and confidence in providing oral health education, performing oral examinations, recognizing dental caries and oral infections, and making timely referrals to dentists.

Aims and Objectives

There are two specific aims for this project. The first aim is to conduct a needs assessment. To accomplish this aim, the following objectives were developed:

Objective 1. Examine current nursing curricula needs and requirements for oral health modules

Objective 2. Identify online curriculum options for University of Hawaii at Hilo nursing students.

The second aim for the project is to pilot the oral health curriculum by utilizing the following objectives:

Objective 1. Recruit a minimum of 25 BSN and DNP nursing students to pilot test the selected oral health curriculum. Pre-test of oral health knowledge and understanding of potential role in filling in the oral health gap to educate patients, perform oral exams, and refer to dentists as appropriate.

Objective 2. Evaluate the process and outcomes of the oral health curriculum.

Chapter 2: Project Description

Review of Literature

This chapter will begin with a general overview of dental caries and the prevalence and impact caries has on an individual's health. A comprehensive review of the literature was completed to understand the current state of knowledge regarding oral health, the high incidence and impact of dental caries in vulnerable populations, and effective prevention strategies. The search engines used was EBSCOhost and PubMed using key words "oral health curriculum", "dental caries", "oral health knowledge", "inter-professional collaboration", and "knowledge acquisition of oral health". The need to increase the knowledge of oral health in healthcare providers, initiate inter-professional collaborative efforts, and integrate an oral health curriculum into undergraduate and graduate-level nursing programs was also examined.

Overview of caries

Oral flora is made up of bacteria that include mutans streptococci that colonize in the mouth and form a biofilm known as plaque (National Institute of Dental and Craniofacial Research, 2000). The carbohydrates and sugars eaten in food are fermented by the oral flora and forms lactic acid. According to the National Institute of Dental and Craniofacial Research (NIDCR) Surgeon General's report, with recurrent cycles of acid generation the minerals in the tooth enamel microscopically begin to dissolve and form a white or brown spot under the enamel surface or dental caries (2000). The dental caries can advance and form a cavity (hole in tooth) if it goes unnoticed and if left untreated, can then progress into the dentin and the pulp tissue causing pain and infection. With no treatment, the infection can lead to an abscess, bone destruction, and spread further in the blood stream causing sepsis.

Prevalence and Impact of Dental Caries

Dental caries is most prevalent in vulnerable populations particularly those of low socioeconomic status (SES), racial and ethnic minorities, and poor children (Dolce, Haber, & Shelley, 2012). Oral health beliefs and practices such as premastication, can contribute to the early development of dental decay and start when eating habits are being established (Mouradian et al., 2003). The effects of poor oral health have far reaching consequences. Besides physical complications such as pain, difficulty eating, and speech delays, dental caries can lead to delayed learning, increased absenteeism, decreased self-esteem, and poor social interaction (Berg & Stapleton, 2012; Deguchi, 2013; Mattheus & Shannon, 2015). Untreated caries can increase the risk for further health problems such as cardiac disease, diabetes, or sepsis and is also linked to respiratory disease and adverse outcomes in pregnancy (NIDCR, 2000).

Cost for Dental Care

Standard dental visits are based on recommendations by age and may consist of an oral examination, x-rays, cleaning, fluoride varnishing, nutrition counseling and anticipatory guidance (American Academy of Pediatric Dentistry, 2013). Dental health services in the United States cost approximately \$117 billion in 2015, which accounted for 3.7 percent of the overall national health spending and in 2016 spending increased to \$124 billion (Wall & Vujcic, 2016; American Dental Association, 2017). In the United States, dental care is considerably more expensive than medical care even with dental insurance. A standard dental visit cost approximately \$706 per person with an expense and with a mean out of pocket of about \$318. According to Pryor et al. (2009), a sample survey revealed that 27 % of all overall health care were due to out of pocket dental costs per household. Dental care will most likely be delayed until it becomes emergent resulting in extensive treatment and higher costs.

Complications of dental caries have caused major public health issues in the United States and other high-income countries. In the state of Hawaii, there was an estimated 3,000 emergency room visits in 2012 in all age groups, for preventable oral health conditions that cost approximately \$8.5 million in hospital charges (HDOH, 2016). The cost is even higher for neighbor islands due to transporting patients to Oahu for care. In 2013, the cost to transport 2,266 Medicaid eligible children was \$849,000 because of the lack of dental providers in the state (HDOH, 2016).

Oral Health Knowledge by Healthcare Providers

Medical healthcare providers have little or no education in basic oral health practices, preventing oral diseases, understanding the importance of oral health or had received basic oral health training (Dolce, Haber, & Shelley, 2012; Mouradian et al., 2003; Silk, 2010). Medical providers felt they could not accurately and confidently identify caries to make appropriate referrals (Silk, 2010). Many dentists do not participate in Medicaid because of low reimbursement rates and they do not feel comfortable treating young children, as they have not received the proper pediatric dental training (Cooper et al., 2017). Pediatric dentistry consists of two to three years of specialty training of infants through adolescence as well as children with special needs and limits dental practice to only treating children (American Academy of Pediatric Dentistry, 2016).

To increase the oral health knowledge of healthcare providers, oral health curricula were created by interdisciplinary medical-dental-educational teams that covered oral health promotion and practice, common oral health pathology, dental emergencies, collaboration with dentists, systemic health interactions, children with special health needs, and hands on training in fluoride varnish applications (Mouradian et al., 2003). The *Smiles for Life: A National Oral Health*

Curriculum examines oral health across the lifespan and can be utilized to provide faculty with teaching-learning resources to facilitate integration of oral health into clinical, didactic, and simulation learning environments (Dolce, Haber, & Shelley, 2012). Knowledge acquired through implementation of oral health education promotes confidence and provides guidelines in oral health activities for healthcare providers to complete during a medical visit (Gereige et al., 2015).

Inter-Professional Collaboration

In response to the growing public health problem that caries presents, medical and dental providers are advocating for early caries prevention and recognizing the need for inter-professional collaborative efforts (Braun & Cusick, 2016). Healthcare practitioners on average will provide care to children at least twelve times in the first three years of life, which offers opportunity to promote oral health and make referrals to dentists (Berg & Stapleton, 2012; Mouradian et al., 2003). A cost-effective way to decrease the incidence of caries is to train healthcare providers to deliver anticipatory guidance, reinforce proper brushing techniques, perform oral health risk assessments, and apply fluoride varnishing (Berg & Stapleton, 2012; Mahat, Lyons, & Bowen, 2014). Medical-dental collaboration strategies have included collocating dental providers in primary care settings to provide preventive services (Braun & Cusick, 2016). The lack of dentists has left a gap in oral health services that healthcare providers can fill.

Nursing Students Oral Health Knowledge

Oral health has not been a high priority in nursing practice and many health care providers (nurse practitioners, nurses, physicians, pharmacists) do not receive sufficient education in basic oral care (Dolce, 2014). Oral health is generally included in an undergraduate

nursing curriculum but the depth of the knowledge and skills being taught are minimal. The study by Spurr et al. (2017) discovered that there is limited research on oral health knowledge and practice in BSN programs globally and oral hygiene is the only part that is learned and utilized in practice.

Many children do not have a dental home by their recommended first dental visit at age one, but they usually have a medical home and see their health care provider for a minimum of seven routine visits in their first year of life (Golinveaux et al., 2014). This provides an opportune time to perform an oral health assessment, oral health care guidance to parents, and make appropriate referrals to dentists for early preventive care (Golinveaux et al., 2014). Nurse practitioners and other health care providers are uniquely positioned to have a positive impact on oral health promotion and prevention if they were provided with the knowledge and skills to do so. Students in nurse practitioner programs do not receive comprehensive training and education in oral health and are not able to perform oral risk assessments, apply fluoride varnishing, or make appropriate dental referrals.

Prevention and early detection of oral disease can be accomplished through proper oral health education and tools that are lacking in nursing curricula (Hahn et al., 2012). Dolce, Haber & Shelley found that oral health promotion and disease prevention can be achieved with the help of the millions of RNs working in the United States, by integrating oral health into their nursing practice (2012). Nurse educators and faculty are highly recommended to incorporate *The Oral Health Nursing Education and Practice* and *Smiles for Life* program in nursing school curriculums (Dolce, Harker, and Shelly, 2012). *The Oral Health Nursing Education and Practice* program is geared towards preparing nurses to provide evidence based dental care in various settings and work in collaboration with dental professionals to reduce oral health

disparities. The *Smiles for Life* curriculum was specifically made for educators and primary health care providers to cover oral health across the life cycle (Dolce, 2012). This interactive train the trainer module is designed to not only educate but also demonstrates how to perform oral examinations and application of fluoride varnish. *Smiles for Life* can be done on-line individually or in groups which allows for flexibility in learning.

Summary

There is ample literature on the prevalence and impact poor oral health has on individuals and populations, but poor oral health continues to be a growing and expensive public health concern. Physical, mental, and social health are all affected by poor oral health. Ethnic minorities, children, and the low-income have the worst oral health outcomes.

Inter-professional collaboration efforts are encouraged in response to the increase in dental caries, lack of dental providers, and access to care. Oral health curricula for healthcare providers were developed to increase oral health knowledge and skills. The *Smiles for Life* oral health curriculum is one tool that can be utilized in increasing oral health knowledge among healthcare providers. The curriculum can be done individually or incorporated into a nursing program. With increased knowledge and skills, health care providers will be able to provide oral health education, perform oral assessments, and identify potential oral disease with more confidence. These efforts can increase oral health outreach and potentially decrease emergency room visits of preventable dental concerns.

Chapter 3: Project Design and Evaluation Plan

The purpose of this Practice Inquiry Project is to pilot an oral health curriculum into the undergraduate and graduate level nursing programs to improve oral health knowledge, assessment skills, and oral health care interventions of nurses in primary care. To accomplish this goal, specific aims and objectives were created. This chapter focuses on the project design, methodology for aims and objectives and analysis of the data. Discussion of the evaluation plan of intervention results and human subject protection are also included. The social model of health serves as the basis of this project specifically the second, third, and fourth principles.

Theoretical Framework

The social model of health addresses the broader health influences such as social, economic, cultural, and environmental factors instead of disease and injury (Figure 1). This model examines the relationships between individuals, their environment, and the disease using a community approach (NIDCR, 2000). The relationship between oral health status and social determinants of health are identified and will be used to incorporate an oral health curriculum to help guide the oral health practices among vulnerable populations in East Hawaii. The social model of health describes the individual as having fixed characteristics (age, gender) but the layers that surround them can influence the individual's health and be modified by policy (Whitehead, Dahlgren, & Gilson, 2001).

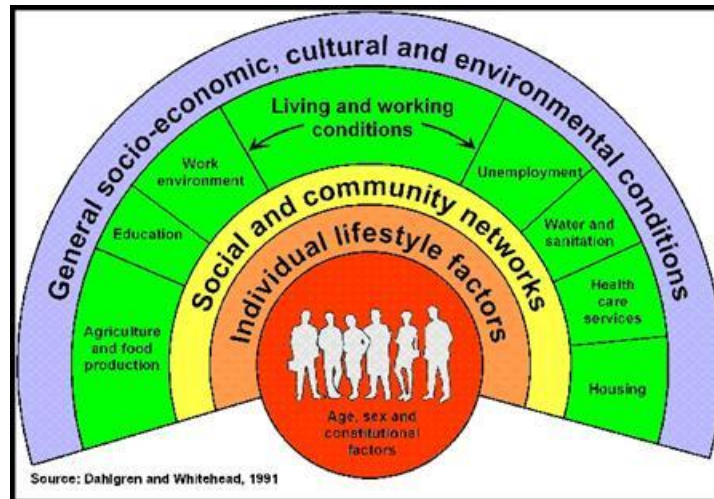


Figure 1: Social model of health addresses the broader influence of health such as social, cultural, economic, and environmental factors instead of disease and injury.

The social model of health incorporates five key principles which are 1) addressing broader determinants, 2) empowering individuals and communities, 3) intersectoral collaboration, 4) enable access to health care, and 5) reduce social inequities. The following are examples of how the five principles will be applied.

The first layer addresses the individual's oral health that is influenced by broader determinants such as ethnicity, culture, physical environment and socioeconomic status to name a few. Diet and oral hygiene practices are mainly influenced by family and culture. Oral health status has a strong correlation to these influences and health promotion strategies target addressing them.

Empowering individuals and communities with oral health education and skills provides an opportunity to make changes to oral health practices and behaviors. Having access and available resources within the community will help support individuals and families to make healthy behavior changes. Oral health knowledge acquisition by healthcare providers can

empower implementation of interventions that will lead to improved oral health outcomes in vulnerable populations.

Intersectoral collaboration is defined as the cooperation among different social groups that enables them to solve community problems (Medical Dictionary, 2009). To address the poor oral health outcomes in vulnerable populations, dental providers, healthcare providers, insurance companies, government agencies, and non-government organizations need to work together. Forming collaboration with the school of nursing and dental providers will build relationships and future clinical sites.

By incorporating an oral health curriculum in nursing programs, nursing students will increase their oral health knowledge and skills. As future healthcare providers, the DNP graduate will be able to provide needed fluoride treatments and exams in conjunction with dental providers thus reducing the incidence of dental caries and enabling access to oral health care.

Social inequalities persist as a challenge in oral health care. Hawaii is an island state where services and resources are unevenly distributed. Many of the resources and services are on Oahu leaving neighbor islands at a disadvantage. The state of Hawaii does not have a dental school which limits the ability of the local universities to generate research and dental treatment programs and to compete for external funding. With the integration of an oral health curriculum in nursing programs, nurses will be able to provide oral health education and interventions to individuals and communities.

Concept Map

The lack of knowledge regarding oral health by patients and healthcare providers creates the need for more education and training (Sharif, Saddki, & Yusoff, 2015). Knowledge acquisition is obtained with the implementation of oral health curricula in nursing programs and

the learning of oral care (Golinveaux et al., 2013). When knowledge is gained from learning, healthcare providers can empower individuals, families and communities with oral health treatments, education and resources thus improving oral health outcomes (Dolce, 2012).

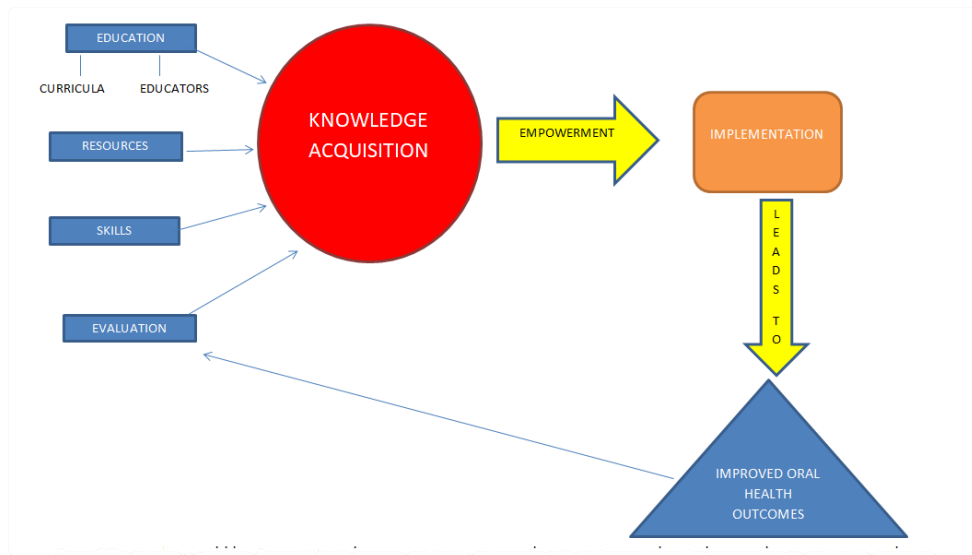


Figure 2. Knowledge Acquisition Concept Map to improve oral health outcomes by incorporating an oral health curriculum in the BSN and DNP programs.

The concept of knowledge acquisition is the process of learning information and developing skills through education, training, and experience received from implemented oral health curricula as depicted in Figure 2. Antecedents are the incidents that must transpire prior to the occurrence of the concept whereas the consequences are what occur as a result of the concept (Ream & Richardson, 1996). Antecedents of knowledge acquisition identified were education to include curricula and educators, resources such as dental preceptors, supplies, and clinical sites and hands on training to develop skills and evaluation of baseline knowledge (Dolce, Haber & Shelly, 2012; Golinveaux et al., 2013; Cooper et al., 2017).

Once obtained, healthcare providers are then empowered to implement new knowledge and skills learned to provide oral health care to individuals and communities to identify possible oral disease risk, provide oral health education, and make timely referrals to dentists thus improving oral health outcomes. Healthcare providers will gain more confidence in their skills to encourage more oral health education and treatments and build inter-professional relationships with the dental community (Cooper et al., 2017). These interventions will positively impact the community by decreasing absenteeism of both children and parents, lessen the number of emergency room visits for dental concerns thus decreasing dental costs, and create a wider dental service outreach.

Protection of Human Subjects

Approval for protection of human research participants was granted by the Institutional Review Board (IRB) from the University of Hawaii as an exempt application because the project poses less than minimal risk and does not involve a vulnerable population. Collaborative Institutional Training Initiative (CITI) certification for non-exempt social and behavioral science researchers and key personnel was completed on March 21, 2018 (Appendix E). The School of Nursing at the University of Hawaii at Hilo was the chosen site for the project implementation.

Participant Recruitment

A convenience sample of 25 nursing students enrolled full time in the BSN and the DNP programs at the University of Hawaii at Hilo were identified as the target population for recruitment. Students who were enrolled part time in the nursing program or whose major was not in nursing were not considered for this project. Participants were recruited by email, flyer (Appendix A), and in person at the BSN student's Spring Orientation. Consent forms and

contact information was provided to interested participants through a separate email account that was created specifically for project communication.

Data Collection Tools

To evaluate the effectiveness of the pilot project, four assessment tools were used for data collection purposes: 1) Oral Health Pre-Test, 2) Certificates of Completion, 3) Oral Health Post-Test, and 4) Oral Health Evaluation Survey. Pre-and post- test questions were chosen from a test bank of established questions from the *Smiles for Life* curriculum (Appendix C). The pre- test was administered and scored before the link to curriculum modules were given to the participants. Participants were asked to submit their certificate of completion to verify they had finished each module. The post-test was administered after all modules were completed to compare if participants had an increase in knowledge after they completed the oral health modules. The post-test contained the identical questions as the pre-test, to measure for any increase in the participant's learning.

The purpose of the survey was to assess for change in understanding of nursing roles in oral health and to gain response from the participants on their learning experience in doing the oral health modules. The survey asked for feedback on the materials presented, method of delivery, ease of accessing materials, and the time spent on the modules to ascertain if the oral health curriculum was effective in their learning. Participants were also solicited to comment if the oral health curriculum should be integrated into the nursing program and the implications their new knowledge and skills had in their future nursing practice.

Data Analysis Plan

Results of the pilot project were analyzed for increase in participant's oral health knowledge and the effectiveness of incorporating an oral health curriculum into the existing

nursing program curricula. The data collected was analyzed manually due to the small sample size. Quantitative data included the certificates of completion to demonstrate how many of the participants were able to successfully complete the oral health modules. Pre/post tests were scored manually using the provided answer key from the *Smiles for Life* curriculum. Qualitative data included several open-ended questions in the Oral Health Evaluation Survey to better understand the utility of the curriculum for nursing students. The analysis of the survey results was accomplished by using mode for the categorical data that occurred most frequently in the Likert scale questions. Descriptive statistics were used to summarize variables such as gender, program, and certificate completion. For the open ended questions on the survey, a qualitative summary was used to analyze the participant's comments.

Due to the small sample size the data was analyzed manually with the exception of the pre/posttests which were scored on a continuous scale to measure if the students had an increase in oral health knowledge and skills. Pre/post test results were analyzed using the Wilcoxon signed rank test, the non-parametric alternative to the t-test, using JASP Statistical Software. This test was selected because of the small sample size and the inability to assume normal distributions. The Wilcoxon test is used to compare change over time between two sets of scores from the same individuals.

Chapter 4: Results

This chapter addresses the results from the pilot project to incorporate an oral health curriculum into the nursing program. The results of the aims and objectives are summarized with the appropriate data analysis.

Results

Specific Aim 1: Conduct a needs assessment

Objective 1. Examine current nursing curricula needs and requirements for oral health modules

Needs assessment data provides essential information to develop effective program planning (Bigbee, Rainwater, & Butani, 2016). A needs assessment was conducted at the University of Hawaii at Hilo on the nursing courses offered by reviewing nursing course descriptions and faculty was consulted to determine if adequate oral health content and skills were provided to nursing students. Spring semester was determined to be the optimal placement to pilot the *Smiles for Life* modules for the project as the DNP students were doing their pediatric didactic and clinical rotations and the BSN students were doing community and collaborative rotations.

Objective 2. Identify online curriculum options for University of Hawaii at Hilo nursing students.

A search for available on-line oral health curricula was performed to determine what resources were available for nursing students. The literature review revealed several oral health curricula that are available online. The American Academy of Pediatrics (AAP) recognizes three online oral health curricula. The *Protecting All Children's Teeth (PACT): A Pediatric Oral Health Training Program* was an online training module used to train medical students and

residents in oral health. The curriculum is no longer available, but the content is still accessible on the AAP website. The *Smiles for Life National Oral Health Curriculum* is endorsed by the AAP and approved for continuing education credits. The *Smiles for Life* curriculum has eight modules that cover core areas of oral health for all age groups and is designed to educate healthcare providers in oral health promotion (AAP, n.d). *The Education and Quality Improvement in Pediatric Practice (EQIPP) Oral Health in Primary Care Course* is an online course that focuses on oral health promotion, dental referrals, caries risk assessments, and fluoride varnish application for pediatric primary healthcare providers. The course is free for AAP members and \$199.00 for non-members. The Oral Health Nursing Education and Practice (OHNEP) initiative developed an oral health toolkit that addresses oral health content and clinical competencies for nurse practitioners with the intent to “weave” evidence based oral health content and teaching strategies into nurse practitioner programs (OHNEP, n.d.). The toolkit recommends the *Smiles for Life* as the curriculum to incorporate into nursing programs and provides templates, documents, and guideline links as resources.

The chosen curriculum for this project was the *Smiles for Life: A National Oral Health Curriculum*, which is evidence based, nationally recognized oral health curriculum that is endorsed by 20 national organizations to include the American Dental Association (ADA), American Dental Hygienists’ Association (ADHA), American Academy of Family Physicians (AAFP), and American Academy of Pediatrics (AAP). First developed as an educational resource and oral health curricula for medical professionals, *Smiles for Life* was a collaborative effort between physicians and dentists to enhance the role of medical professionals in the promotion of oral health (Deutchman, Douglass & Douglass, 2011). Currently, on its third edition, *Smiles for Life* has expanded the target audience to include all primary care providers

and front-line health workers. The curriculum is offered on line, free of cost, and has a total of eight modules which at the end of each module a certificate of completion is awarded for a passing score of 80% or higher. Each module is approximately 60 minutes and covers the following oral health topics (see Appendix F):

1. Relationship of Oral and Systemic Health
2. Child Oral Health
3. Adult Oral Health
4. Acute Dental Problems
5. Pregnancy and Women's Oral Health
6. Caries Risk Assessment, Fluoride Varnish and Counseling
7. The Oral Exam
8. Geriatric Oral health

If incorporated into an existing nursing curricula, the *Smiles for Life* curriculum provides faculty with a toolkit of developed materials, lasting 45 minutes each that can be downloaded at no cost and includes presenter notes, PDFs, implementation guide, videos, Accreditation Council for Graduate Medical Education (ACGME) formatted educational objectives, test questions, and resources (Deutchman, Douglass, & Douglass, 2011). If done individually, students would need to schedule approximately eight hours throughout the semester to finish all eight modules. An additional benefit to students with their nursing license is that they can earn 1.0 contact hour of continuing education units for each individual module completed.

Specific Aim 2: Pilot the oral health curriculum.

Objective 1. Recruit a minimum of 25 BSN and DNP nursing students to pilot test the selected oral health curriculum. Pre-test of oral health knowledge and understanding of potential

role in filling in the oral health gap to educate patients, perform oral exams, and refer to dentists as appropriate.

A total of ten participants volunteered in this pilot project, eight DNP students and two BSN students. Of those ten participants, there were 9 females and 1 male, ranging from those in their last semester or in their last year of nursing school. Participants were informed that the purpose of the project was to pilot an oral health curriculum that covers core concepts of oral health and to increase the participant's knowledge in oral health education and skills. Informed consent was reviewed and completed with each participant to ensure understanding of project purpose, participant rights, and address confidentiality of project information (Appendix B). Participant information was stored in a locked file box for the duration of project and will be destroyed upon completion of the project. A pre-test was administered to gauge participant's oral health knowledge prior to taking the lessons in the modules. Upon receiving the completed pre-test, a link to the *Smiles for Life* modules was sent to the participant with information and instructions on how to complete the modules in the oral health curriculum, how long each module will take, and a time line for completion of modules. Participants had until May 2, 2019 to complete all eight modules with a passing score of 80% or higher and submit copies of their certificates of completion for data collection purposes. When the participant submitted all eight of their certificates of completion, a post-test was administered. When the completed post-test was received, a survey was distributed for feedback on the modules and learning experience of each participant (Appendix D).

Objective 2. Evaluate the process and outcomes of the oral health curriculum.

Quantitative Findings

The pre/post-tests contained 24 prepopulated multiple-choice questions that were chosen from the *Smiles for Life* curriculum. Using a Wilcoxon signed rank test, the results showed that there was an increase from pretest knowledge scores (mean = 12.70 out of 24 possible points) to post-test knowledge scores (mean = 21.30 out of 24 possible points) with an average gain of 8.6 points (see Figure 3). There was also a decrease in the spread between scores from the pretest (SD = 4.057) indicating that the knowledge gap of participants narrowed as a result of the curriculum.

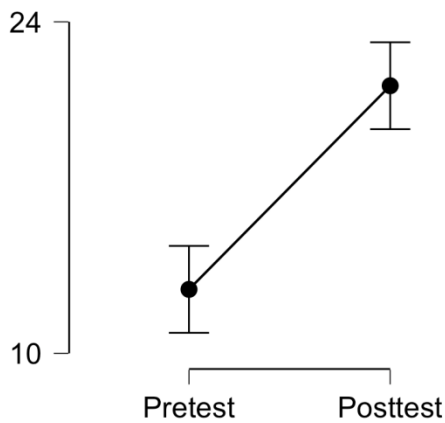
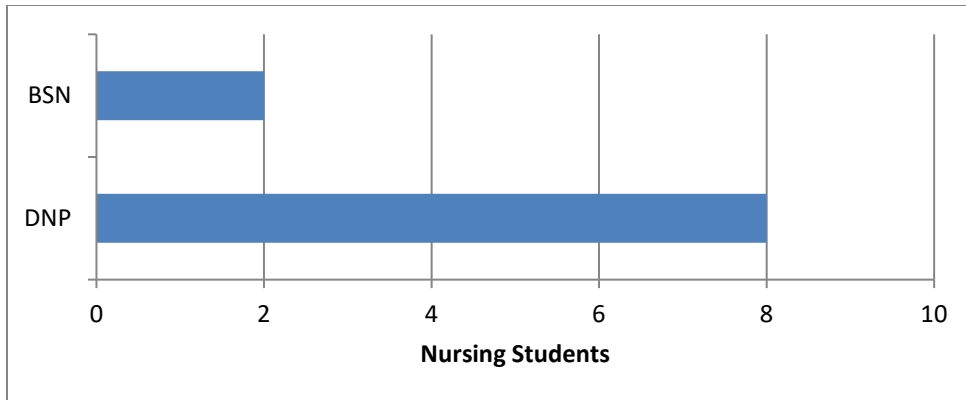


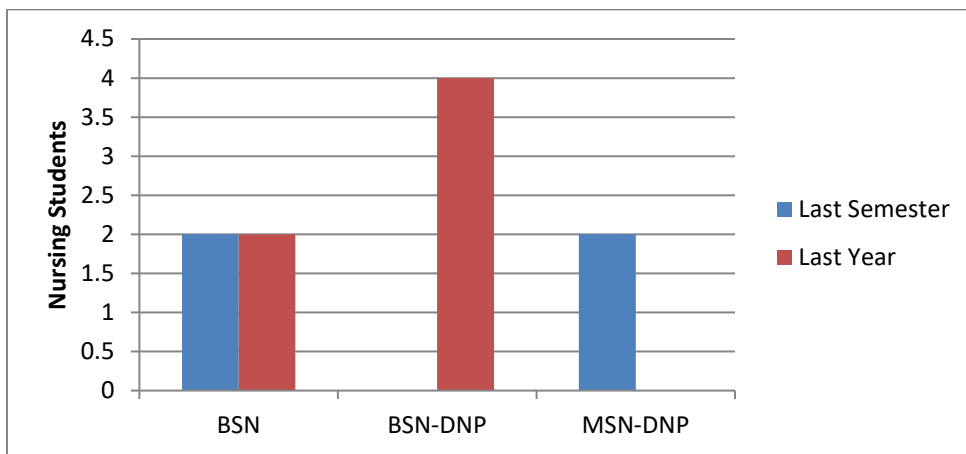
Figure 3. Wilcoxon signed rank test results of knowledge gained

At the end of the semester, a survey was distributed to evaluate the curriculum used, the participant's oral health knowledge, feedback on their experience, and any change in their understanding of the nursing role with oral health. The survey was divided into four sections: 1) General, 2) Time, 3) Method, Materials, Application, and 4) Future Nursing Practice.

Q1. What program are you in?



Q2. What year are you in?



Two of the ten participants (20%) were enrolled in the BSN program and both just finished their last semester. Six (60%) of the remaining participants were enrolled in the BSN-DNP program, of which two had just completed their last semester and the other four are in the last year of the program. The last two participants (20%) were enrolled in the Master of Science in Nursing (MSN) -DNP program and both had just completed their last semester.

Q3. Did you complete the oral health curriculum modules?

Q4. If no: Please describe why you were not able to complete?

Q5. I had adequate time to complete all oral health modules within the allotted time?

Q6. If no: Please describe why you were not able to complete?

All participants (100%) responded that they had enough time to complete the modules which made question four irrelevant. Eight of the ten participants (80%) responded that they had adequate time to complete the modules within the allotted time (Spring 2019 semester). The two participants (20%) who answered “no” had commented in question six that “The modules took 7-8 hours to complete” and “Given at the end of a busy semester”.

Q7. Was the material easily accessible?

Q8. Was this method effective in learning about oral health?

Q9. If the method was not effective, what method would you have preferred?

Q10. On a scale of 1-5 where 1 is “Very difficult” and 5 is “Very easy”, how would you rate the material presented in the modules?

Q11. On a scale of 1-5 where 1 is “not at all” and 5 is “significant”, how would you rate the knowledge gained after completing the oral health curriculum?

For the Materials, Methods, Application section, four (40%) of the participants indicated that the materials were “easy” to access and the other six (60%) participants responded that the materials were “very easy”. All participants indicated that the method of learning was “effective” (30%) or “very effective” (70%). Although all participants indicated that the method was effective, one participant responded to question nine that they would have preferred a summarized form with relevant information pertaining to the advanced practice nurse. Eight participants (80%) felt that the modules were “easy”; one (10%) responded that it was “somewhat difficult” and one (10%) felt that that the modules were “difficult”. The participants all agreed that the knowledge gained from the curriculum was “good” (50%) or “significant” (50%).

Q12. From the oral health modules, I will be able to apply this knowledge to my practice.

All ten participants reported they were likely to apply the knowledge gained into their nursing practice with responses ranging from 60% “extremely likely”, 30% “more than likely”, and 10% “likely”.

Qualitative Findings

Nine of the ten participants felt that oral health modules should be incorporated into the nursing program in response to *Q13. Do you think oral health modules should be incorporated into the nursing program? Why or why not?* Monitoring and preventing oral and systemic infections, reducing risk that can lead to other comorbidities, and learning how to perform the oral exam were the main themes that emerged from the participants who felt that the modules should be incorporated into the nursing program. Other comments included, oral health is often neglected by both patients and providers, affects health in every age group, and is not taught in health assessment. The reason one participant felt it should not be incorporated is “*There are already a lot of topics to learn in two years and it should be something extra*”.

Q14. What do you think the role of nursing is in oral health?

Responses to question 14 included the following main themes: educate, assess, recognize, advocate, refer, and collaborate to improve oral health outcomes and the overall health of patients.

Q15. How might nurses use what they learned about oral health in the future?

The participants responded that they could use the knowledge they gained to improve their assessment skills, perform better oral exams, apply to daily nursing practice, and provide oral health education to their patients.

Q16. What did you find most interesting or useful in your learning?

One participant's answer was *"I was surprised about how much I did not know about oral health until I started doing the modules"*. The participants responded that what they found the most interesting or useful was the pictures in the modules, relationship between oral health and pregnancy, and the information learned that can be used in their practice.

Q17. Any other feedback or comments?

Seven of the ten participants responded to this question, three left it blank. Responses included that the modules were interesting and informative, some of the modules contained repetitive information, material in the modules could be more interactive and entertaining, and modules took longer than expected. One of the participant's comments was *"Will recommend to nursing faculty to incorporate into their respective courses (Peds, Maternity, Geriatric/Adult, Physical assessment)"*.

Chapter 5: Recommendations and Conclusion

Discussion

The purpose of this pilot project aimed to demonstrate the feasibility and evaluate the process and outcomes of incorporating an oral health curriculum into a nursing program. The course catalog at the University of Hawaii at Hilo nursing program was examined to determine which courses provided oral health content and skills to students. The needs assessment revealed that the nursing program courses offered basic oral health education to their students and varied between programs. In piloting this project, the incorporation of an oral health curriculum showed that nursing students' knowledge and skills increased. The analysis of the survey indicated that 9 out of the 10 participants felt that the curriculum should be implemented because it would improve their oral health assessment skills and their ability to provide oral health education to patients.

Impact of Results on Practice

The results from this pilot project demonstrated that the new knowledge and skills learned from the oral health curriculum can be applied to future nursing practice. Nurses will have more confidence in performing oral examinations and be able to recognize oral diseases that need to be referred to dental providers. Nurses will also be able to promote oral health education and interventions that can lead to not just better oral health but better overall health outcomes.

Strengths and Limitations

One of the major strengths identified in this project was that all the participants had an increase in their oral health knowledge, skills, and ability to recognize that oral health is essential to overall health. The curriculum chosen, *Smiles for Life*, was nationally recognized, free of cost,

and provided continuing education credits. Participants felt that the *Smiles for Life* curriculum was easy to access, materials had great pictures and videos, and included a toolkit for faculty to use to incorporate into their existing nursing program.

Limitations to this project included the small sample size, which may have been related to the timing of project implementation. The spring semester for the nursing students was found to not be an ideal time due to heavy course loads for both DNP and BSN programs and graduation preparation. Ideally, the eight modules should be spread over different semesters coinciding with the appropriate course. For example, during the semester that pediatrics is offered, only the pediatric oral health module should be incorporated at that time.

Dissemination Plans

Publishing the project can be used for future curriculum development in the nursing program. The information that was gained from this project can help to avoid duplication and save on resources of non-feasible studies. The results from the project demonstrated feasibility that the *Smiles for Life* curriculum could be incorporated into the existing nursing program. The curriculum is easy to access, available at no cost, and contains an instructor toolkit that has all materials needed to incorporate into an academic setting. Proposing a pilot project of an instructor lead module may be helpful in determining if there would be an increase in participation and if the modules would be more effective if taught by an instructor.

Future Implications for Practice

Dental caries is a preventable, multifactorial condition that creates a costly public health problem. Collaborations between medical and dental healthcare providers will create healthier patients and promote better dental health. The incorporation of an oral health curriculum into the nursing programs not only provides nurses with more knowledge and skills to provide education,

assessment, and interventions but also builds the nursing workforce capacity to promote dental preventive measures to use in their practice. Nurses would be able to fill the gap of limited dental providers and help to improve an individual's oral health. Integrating primary healthcare and oral care can impact population health by reaching the most vulnerable populations and improve health outcomes.

Conclusion

Dental caries is a preventable, multifactorial condition that creates a costly public health problem. Collaborations between medical and dental healthcare providers will create healthier patients and promote better dental health. Integrating primary healthcare and oral care can reach the most vulnerable populations and families resulting in improved health outcomes. Teaching oral health education and skills builds capacity in the nursing workforce to promote dental preventive measures to use in their practice. The feasibility to incorporate an oral health curriculum into an existing nursing program can be done. The *Smiles for Life* curriculum is established, nationally recognized, and provides the tools and materials to help educators incorporate it into an academic setting. With the increase in their oral health knowledge and skills, nurses will be more confident in providing oral education and conducting oral exams on their patients. Incorporating an oral health curriculum is just one strategy to address this growing public health concern.

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Appendix A

Calling all BSN and DNP students to participate in a research study!

The purpose of this study is to incorporate an oral health curriculum into the undergraduate and graduate level nursing into the nursing program at UH Hilo to improve knowledge and assessment skills of nurses in primary care

- ◆ Did you know Hawai'i received an "F" grade for oral health by the Pew Center?
- ◆ Learn how to help improve the dental health of Hawai'i's residents
- ◆ Oral health curriculum will be provided at no cost via online
- ◆ CEUs and a certificate will be awarded upon completion.
- ◆ Study will be conducted at the University of Hawaii at Hilo, 200W Kawili St. Hilo, HI 96720

Study will be conducted in the Spring semester of 2019



If you are interested, please contact

Leanne Kihara at

[dnporalhealthproject](mailto:dnporalhealthproject@gmail.com)

[@gmail.com](mailto:dnporalhealthproject@gmail.com)

for more

information

Appendix B



University of Hawaii Consent to Participate in a Research Project

Katharyn Daub, Principal Investigator

Project title: Incorporating an Oral Health Curriculum in a Nursing Program

Aloha! My name is Leanne Kihara and you are invited to take part in a research study. I am a graduate student at the University of Hawaii at Hilo in the Doctorate of Nursing Program. As part of the requirements for earning my graduate degree, I am doing a project inquiry.

What am I being asked to do?

If you participate in this project, I will meet with you for an interview at a location and time convenient for you.

Taking part in this study is your choice.

Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you. Your choice to participate or not participate will not affect your rights in the UH Nursing Programs.

Why is this study being done?

The purpose of my project is to implement an oral health curriculum into the nursing programs at UH Hilo. I am asking you to participate because you are enrolled as a full-time student in one the nursing programs.

What will happen if I decide to take part in this study?

The survey will consist of 15-20 questions. It will take 5 to 10 minutes to complete. The survey questions will include questions like, "Did you complete the oral health curriculum modules? If no: Please describe why you were not able to complete?"

What are the risks and benefits of taking part in this study?

I believe there is little risk to you for participating in this research project. You may feel uncomfortable answering the questions during the survey. If you do become uncomfortable, you can skip the question or take a break. You can withdraw from the project altogether.

There will be no direct benefit to you for participating in this survey. The results of this project may help improve the nursing program curricula to benefit future students.

Privacy and Confidentiality:

I will keep all study data secure in a locked filing cabinet in a locked office/encrypted on a password protected computer. Only my University of Hawaii advisor and I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawaii Human Studies Program has the right to review research records for this study.

After I write a copy of the survey results, I will erase or destroy the surveys. When I report the results of my project inquiry, I will not use your name. I will not use any other personal identifying information that can identify you. I will use pseudonyms (fake names) and report my findings in a way that protects your privacy and confidentiality to the extent allowed by law.

Future Research Studies:

Even after removing identifiers, the data from this study will not be used or distributed for future

research studies.

Questions:

If you have any questions about this study, please call or email me at (808) 989-0565 & leanney@hawaii.edu. You may also contact my advisor, Dr. Katharyn Daub, at (808) 932-7067 & katharyn@hawaii.edu. You may contact the UH Human Studies Program at 808.956.5007 or uhirb@hawaii.edu to discuss problems, concerns and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <http://go.hawaii.edu/jRd> for more information on your rights as a research participant.

Keep a copy of the informed consent for your records and reference.

Signature(s) for Consent:

I give permission to join the research project entitled, *“Implementing an Oral Health Curriculum in a Nursing Program”*

Name of Participant (Print): _____

Participant’s Signature: _____

Signature of the Person Obtaining Consent: _____

Date: _____

Mahalo!

Appendix C

Oral Health Pre-Post Test

1. What is the most common chronic disease of childhood?
 - A. Asthma
 - B. Seasonal allergies
 - C. Dental caries
 - D. Otitis media

2. What can a primary care clinician do to promote oral health?
 - A. Collaborate with dental and other health professionals
 - B. Apply dental sealants
 - C. Prescribe oral fluoride supplements to every patient
 - D. Apply fluoride varnish to the teeth of all adults

3. What is the suggested common pathway linking chronic periodontitis and conditions such as diabetes, coronary artery disease and adverse pregnancy outcomes?
 - A. Direct bacterial extension
 - B. Poor nutrition
 - C. Circulating antibodies
 - D. Inflammation

4. Oral bacteria and dietary sugars are two of the three parts of the “Etiology Triad” of Early Childhood Caries. What is the third part of the triad?
 - A. The enamel and dentine of teeth which is vulnerable to demineralization

- B. Bacterial toxins which attach the teeth's calcium matrix
 - C. Saliva which provides a moist environment for the cariogenic oral bacteria
 - D. Genetic predisposition to colonization by cariogenic oral bacteria
5. How can primary care clinicians prevent Early Childhood Caries?
- A. Counsel a child's caregivers about the child's diet
 - B. Apply dental sealants to the teeth of young patients
 - C. Prescribe fluoride to every young patient
 - D. Refer children to a dentist at age 5
6. What is the first step in performing a knee-to-knee oral examination of a child's mouth?
- A. Have the caregiver hold the child on their lap facing the examiner
 - B. Have the caregiver hold the child facing them in a straddle position
 - C. The examiner looks in the child's mouth
 - D. Have the caregiver separate the child's jaws
7. Periodontal disease can be clinically distinguished from gingivitis in which of the following ways?
- A. Inflammation of the gums
 - B. White discoloration of the permanent teeth
 - C. Enlarged pockets at the gum base
 - D. Gingival hypertrophy
8. Which of the following is NOT a normal age-related tooth change?

- A. Gingival recession
 - B. Root caries
 - C. Yellowing of teeth
 - D. Wearing away of teeth with exposed dentin
9. Which of the following patients require bacterial endocarditis antibiotic prophylaxis?
- A. A 26-year-old woman with mitral valve prolapse undergoing routine teeth cleaning with no anticipated bleeding.
 - B. A 64-year-old man with a prosthetic mitral valve who is undergoing a tooth extraction.
 - C. A 16-year-old boy with a ventricular septal defect completely repaired in infancy who requires extraction of an impacted wisdom tooth.
 - D. A 32-year-old man who had bacterial endocarditis 5 years ago who is undergoing orthodontic appliance adjustment.
10. Which antibiotic is the drug of choice for intra-oral infections?
- A. Ciprofloxacin
 - B. Doxycycline
 - C. Penicillin
 - D. Cefuroxime
11. Which of the following is an indication for hospitalization of a child with facial cellulitis?
- A. Localized facial swelling

- B. Fever
 - C. Tracking of swelling into the neck
 - D. Difficulty chewing
12. When should an avulsed tooth in a 3-year-old be optimally re-implanted?
- A. It should not be implanted
 - B. Within 5 minutes
 - C. Within 1 hour
 - D. Within 12 hours
 - E. Within 24 hours
13. Which of the following is a TRUE statement?
- A. Mothers with caries pass their genetic predisposition for caries on to their babies
 - B. Mother with caries pass caries-causing bacteria to their babies in utero
 - C. Mother with caries pass caries-causing bacteria to their infants early in life via saliva transmission
 - D. All of the above
14. A pregnant patient asks you for guidance about having dental treatment during her pregnancy. What would you say?
- A. Dental treatment should only be performed during the second and third trimesters.
 - B. Dental treatment should only be performed during the third trimester

because organogenesis is complete.

C. Dental treatment should only be performed during the second trimester for comfort and safety reasons.

D. Dental treatment can be performed during any trimester.

15. All of the following conditions can cause worsening gingivitis EXCEPT:

A. Onset of puberty

B. Monthly menses

C. Menopause

D. Use of oral contraceptives

E. Pregnancy

16. Which of the following is NOT a mechanism of action for topical fluoride?

A. It inhibits demineralization of the teeth.

B. It promotes remineralization of the teeth.

C. It inhibits bacterial metabolism.

D. It promotes the release of saliva.

17. Which children under the age of 5 should receive fluoride varnish in the medical office?

A. All children at high risk for caries

B. High risk children without a dental home

C. Low risk children

D. All children

18. Which of the following is a benefit of fluoride varnish?
- A. Fluoride varnish permanently seals the pits and fissures of teeth.
 - B. Fluoride varnish decreases the need for routine dental care.
 - C. Fluoride varnish can reverse early decay (i.e., the “white spots”) and slow enamel destruction
 - D. Fluoride varnish replaces the need to take systemic fluoride supplements.
19. A caregiver asks you how many teeth her 3-year-old child should have. What would you respond?
- A. 20
 - B. 22
 - C. 24
 - D. 28
20. A complete oral examination includes each of the following EXCEPT:
- A. Temporomandibular joint (TMJ) exam
 - B. Cervical node exam
 - C. Palpation of the floor of the mouth
 - D. Sinus exam
 - E. Exam of the skin around the mouth
21. You are performing an oral exam on your 21-year-old patient who has been using smokeless tobacco for 4 years. What part of this patient’s oral cavity is especially important for you to examine?

- A. The sun-exposed areas of the patient's cheeks
 - B. The inner aspect of the patient's lips and cheeks
 - C. Any discoloration or pitting of the patient's teeth
 - D. Any plaque build-up along the patient's gum line
 - E. The patient's posterior pharynx
22. What is the most common site for caries in the elderly?
- A. The site of a previous restoration (filling)
 - B. On a root that is exposed due to gingival recession
 - C. On the coronal surface of a tooth
 - D. On the buccal surface of the molars
23. Which of the following statements is true regarding the oral health of elderly patients with dementia?
- A. Aging alone is the major contributor to poor oral health of older individuals with dementia.
 - B. Medications used to treat hypertension, depression, and behavioral disturbances seen in this population have little effect on their oral health.
 - C. Since this population struggles with Activities of Daily Living (ADLs), they are at high risk for poor oral health unless caregivers assist with oral care.
 - D. Reminding these individuals to brush their teeth each day is adequate to achieve and maintain good oral health.

24. What is the most likely reason why complete tooth loss has declined in the US from 50% to 18% in the last 60 years?
- A. The increased use of dental insurance in the elderly.
 - B. The increased use of bottled and filtered water products among adults.
 - C. The addition of fluoride to most community water systems.
 - D. The increased use of multiple prescription medications in the elderly.

Appendix D
Oral Health Survey

Section 1: General

1. What program are you in (choose best answer)

BSN

DNP

BSN to DNP

MSN to DNP

2. What year are you in? (Please circle one)

Year 1

Year 2

Year 3

Year 4

Section 2: Time

3. Did you complete the oral health curriculum modules?

1 Yes

2 No

4. If no: Please describe why you were not able to complete? _____
5. I had adequate time to complete all oral health modules within the allotted time?
- 1 Yes
- 2 No
6. If no: Please describe why you were not able to complete? _____

Section 3: Method, Materials, Application

7. Was the material easily accessible?
- | | | | | |
|-----------|---|-----------|---|------|
| 1 | 2 | 3 | 4 | 5 |
| Very | | Somewhat | | Very |
| Difficult | | Difficult | | Easy |
8. Was this method effective in learning about oral health?
- | | | | | |
|--------|---|-----------|---|-----------|
| 1 | 2 | 3 | 4 | 5 |
| Not | | Somewhat | | Very |
| At All | | Effective | | Effective |
9. If the method was not effective, what method would you have preferred(Please provide answer)_____

10. On a scale of 1-5 where 1 is “Very difficult” and 5 is “Very easy”, how would you rate the material presented in the modules?

| | | | | |
|-----------|---|-----------|---|------|
| 1 | 2 | 3 | 4 | 5 |
| Very | | Somewhat | | Very |
| Difficult | | Difficult | | Easy |

11. On a scale of 1-5 where 1 is “not at all” and 5 is “significant”, how would you rate the knowledge gained after completing the oral health curriculum?

| | | | | |
|--------|------|------|------|-------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at | Poor | Fair | Good | Significant |
| All | | | | |

Section 4: Future Nursing Practice

12. From the oral health modules, I will be able to apply this knowledge to my practice.

| | | | | |
|--------|---|--------|---|-----------|
| 1 | 2 | 3 | 4 | 5 |
| Not | | Likely | | Extremely |
| At all | | | | Likely |

13. Do you think oral health modules should be incorporated into the nursing program? Why or why not? (Please provide answer) _____

14. What do you think the role of nursing is in oral health? (Please provide answer) _____

15. How might nurses use what they learned about oral health in the future?(Please provide answer) _____

16. What did you find most interesting or useful in your learning? (Please provide answer) _____

17. Any other feedback or comments?

Appendix E



Completion Date 21-Mar-2018
Expiration Date 20-Mar-2021
Record ID 26217774

This is to certify that:

Leanne Kihara

Has completed the following CITI Program course:

Human Subjects Research (HSR)

(Curriculum Group)

Non-Exempt Social & Behavioral Sciences Researchers and Key Personnel

(Course Learner Group)

1 - Basic Course

(Stage)

Under requirements set by:

University of Hawaii



Verify at www.citiprogram.org/verify/?w3ba0b850-e282-49de-854b-0cd85d46ccc1-26217774

Appendix F

Course 1. Relationship of Oral and Systemic Health

Description: Focuses on the correlation between oral and systemic health, prevalence, and consequence of oral disease throughout the life span. Prevention of oral disease, learning about frequently seen oral problems and working as part of an inter-professional team to promote oral health

Course 2: Child Oral Health

Description: Focuses on early childhood caries (ECC), etiology, prevalence, and risk factors. Common early developmental issues such as non-nutritive sucking, teething and eruption hematomas are discussed. Learning how to assess and identify the various stages of ECC, and how to provide counseling to patients on oral health promotion is also addressed.

Course 3: Adult Oral Health

Description: Discusses how oral health is affected by disease, medications, substance use, and aging. Risk factor, etiologies of oral diseases, and effective coordination of dental care will be identified. Learn how to identify oral disease, antibiotic prophylaxis, disease prevention, and collaborative management of referrals and treatment procedures.

Course 4: Acute Dental Problems

Description: Acute oral health problems such as infection, trauma and pain. Discusses assessment, treatment and referral, the ability to recognize dental emergencies, and to promote protective equipment to prevent oral injury

Course 5: Pregnancy and Women's Oral Health

Description: Discusses the importance of oral health before, during and after pregnancy. Dental treatment guidelines for pregnant women are addressed. Be able to understand the prevalence of oral disease during pregnancy and the consequence to both the mother and child.

Course 6: Caries Risk Assessment, Fluoride Varnish and Counseling

Description: Focuses on caries prevention, learning about fluoride benefits, safety precautions, fluoride dosing, how to apply fluoride varnish and follow up care.

Course 7: The Oral Exam

Description: Focuses on how to perform a thorough oral examination in both children and adults and how to identify normal and abnormal findings. Learn how to develop awareness for examinations of special populations.

Course 8: Geriatric Oral health

Description: Focuses on oral health promotion in older adults, how to perform a comprehensive oral assessment, be able to identify, manage, and treat common geriatric oral conditions, and common side effects of medications.