PROMOTING FOUNDATIONS FOR INTERPROFESSIONAL COLLABORATIVE PRACTICE: ORAL HEALTH IN NURSING EDUCATION

Roxanne Mariola Dsouza

A thesis submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Science in the Department of Dental Ecology in the School of Dentistry (Dental Hygiene Education).

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Approved By:
Jennifer Brame
Rocio Quinonez
Sara Hubbell
ABSTRACT

Roxanne Mariola Dsouza: Promoting Foundations for Interprofessional Collaborative Practice: Oral Health in Nursing Education
(Under the direction of Jennifer Brame)

This study evaluates knowledge, confidence, and practice behaviors of 64 Accelerated Bachelor of Nursing first–year students at the University of North Carolina at Chapel Hill regarding preventive oral health services. Using a pre–post survey–study design, students completed oral–health–related–questionnaires following didactic and clinical–simulation on oral health principles and preventive services. Fifty–five (86%) students completed the pre–survey, 49 (77%) completed the post–survey following clinical rotations five months later; 44 (69%) completed both. Participants’ showed a significant increase in knowledge from pre–post–questionnaires for two of five questions (p=0.04; p<0.0001). Confidence for screenings (p<0.0001) and counseling (p=0.006) increased; while referrals decreased (p=0.718). Post–intervention, 37% reported performing screenings, 45% counseling, and 8% referrals. Respondents reported significant increase in willingness to implement preventive services in clinical visits (p<0.0001). Mixed educational methods can successfully influence knowledge, confidence and willingness to perform in clinical practice.
To my parents. Thank you for your constant support and undying love. I am eternally grateful to you for instilling the power of prayer in my life.
ACKNOWLEDGEMENTS

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A special thank you to my classmates: Kayla Cunningham, Yuri Oh, and Jackie Smith. I have been so blessed to have been able to share countless memories with you during our educational journey. Thank you for always laughing at my puns. I know that the future of dental hygiene is safe in our hands. Thank you to my incredible professors for your guidance and support during the past two years. To my mentors, Professor Jennie Brame and Ms. Jan Holland, you have both helped me grow so much and I am so happy to know you will always be part of my life.

Last but not least, a huge thank you to my family. To my parents, Robin and Leena, thank you for your prayers and your belief in me. I would be nowhere without your unceasing love. To two very important men in my life, Rocco and Tyler, thank you for your encouragement and for always providing me with a shoulder to lean on. I love you all.
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<th>Description</th>
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<tbody>
<tr>
<td>ABSN</td>
<td>Accelerated Bachelor of Nursing</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>SFL</td>
<td>Smiles for Life</td>
</tr>
<tr>
<td>IPE</td>
<td>Interprofessional Education</td>
</tr>
<tr>
<td>IPC</td>
<td>Interprofessional Collaboration</td>
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<tr>
<td>IPL</td>
<td>Interprofessional Learning</td>
</tr>
<tr>
<td>UNC</td>
<td>University of North Carolina at Chapel Hill</td>
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<tr>
<td>DH</td>
<td>Dental Hygiene</td>
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</table>
CHAPTER I: INTRODUCTION AND REVIEW OF THE LITERATURE

Introduction

In the constantly changing world of health care, providers are encouraged to work collaboratively and provide person–centered care. Despite the statement released by the World Health Organization (WHO) regarding the importance of interprofessional collaboration (IPC) and interprofessional education (IPE), true integration has not been achieved at the student level, specifically relating oral health to overall health. Nurses play a crucial role in the provision of routine oral screenings and counseling to identify conditions that may need further dental care and lessen health disparities. However, optimal oral health education is limited in nursing curricula (Dolce, Haber, & Shelley, 2012; Pai, Ribot, Tane, & Murray, 2016) and may therefore, not translate as a priority for nurses in patient care. Health care accreditation standards are increasingly incorporating IPE components; therefore, oral health in nursing curriculum is a logical way to incorporate interprofessional learning (IPL). Students and faculty must utilize resources available to them by introducing collaborative practice at the educational level.

The purpose of this study is to evaluate knowledge, confidence, practice behaviors, and perceived barriers of Accelerated Bachelor of Nursing (ABSN) students at the University of North Carolina at Chapel Hill (UNC) in providing preventive oral health services both before and after an oral health intervention. These preventive services specifically include oral screening, oral counseling, and dental referrals. The study further intends to evaluate students’ opinions on the IPL environment so as to contribute insight for future IPE experiences.
Review of the Literature

Role of the Nurse

Nurses are an integral aspect of the primary health care team, and should be trained to provide oral screening, counseling, and referrals. According to the WHO, “Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. It includes the promotion of health, the prevention of illness, and the care of ill, disabled and dying people” (“WHO | Nursing,” n.d.). This definition of the nursing profession charges nurses with the role of providing comprehensive, promotional, and preventive care that encompasses oral health. Nurses are frequently the first member of the primary care team seen by patients and are in a prime position to complete oral health assessments and provide screenings, counseling and referrals for their patients.

Existing Oral Health in Nursing Curriculum

Although there is increasing evidence supporting the important relationship between oral and systemic health, a lack of knowledge has been identified in non-dental health curricula worldwide (Hein, Schönwetter, & Iacopino, 2011). Many practicing nurses register oral health as an important component of comprehensive care but few had existing oral health assessments tools to incorporate in practice (Costello & Coyne, 2008). Conflicting evidence shows nurses may feel oral health services are “optional” and may not include these services in in-patient settings (Coker, Ploeg, Kaasalainen, & Carter, 2017). Research indicates that nurses report barriers for providing preventive oral health services such as a lack of knowledge of oral health practices, time constraints and/or a lack of basic resources such as toothbrushes and toothpaste (Costello & Coyne, 2008). Additional barriers include a lack of available continuing education resources for practicing nurses wishing to incorporate oral health assessment tools in practice (Mattheus, Shannon, Gandhi, & Lim, 2018).
Existing Oral Health Programs to Incorporate in Nursing Curriculum

As a deficiency in oral health education for the primary care team has been identified, programs such as the Smiles For Life (SFL) National oral health curriculum (Douglass et al., 2007) have developed to disseminate peer-reviewed oral health curriculum in primary care disciplines; however, oral health concepts are still lacking in curricula (Clark, Quinonez, Bowser, & Silk, 2017; Dolce, 2014; Douglass et al., 2007). Additional frameworks, such as the Qualis Oral Health Delivery Framework, for providing oral health services for primary care providers have been developed to simplify and provide a calibrated and structured process. (Hummel, Phillips, Holt, & Hayes, 2015).

A recent four-part report in Teaching and Learning in Nursing released oral health content for nursing educators to add to curriculum (J. K. Mitchell, May, & Riggs, 2017; J. Mitchell & Shoemaker, 2017). These resources provide specific content for nurses treating patients at various stages in their life with content focusing on the integrated health team and the role of the nurse in providing preventive oral health services such as observing, counseling and providing referrals in a timely manner (J. K. Mitchell et al., 2017; J. Mitchell & Shoemaker, 2017). The report further discussed common oral health manifestations, disease processes, oral health effects of systemic disease, and preventive oral health services a nurse can provide for each of the four stages of life (J. K. Mitchell et al., 2017; J. Mitchell & Shoemaker, 2017). Additional existing programs such as the Oral Health Nursing Education and Practice program at New York University (Dolce et al., 2012) should be used as a model for bridging the oral-systemic educational gap and introducing oral health education in curricula.

Interprofessional Education

IPE is essential for health care professionals and has evolved to become a required component of many health care accreditation standards (Czarnecki, Kloosra, Boynton, & Inglehart, 2014). Research supports IPE provides a better understanding of oral health promotion and
guidelines and improves quality of patient care (Abou El Fadl, Blair, & Hassounah, 2016; Czarnecki et al., 2014; Furgeson, Kinney, Gwozdek, Wilder, & Inglehart, 2015; Haber et al., 2017; Otsuka et al., 2016; Sharif, Saddki, & Yusoff, 2016; Silk, 2018; Wooten, Lee, Jared, Boggess, & Wilder, 2011). Health care seems to also be moving towards a collaborative practice model working in teams to focus on whole-patient-centered care delivering dental and medical services simultaneously (Silk, 2018; Weintraub, 2017). Therefore, incorporating IPC in the health care curricula may be an effective method of promoting both oral and systemic health in the medical and dental professions (Abou El Fadl et al., 2016; Dolce, 2014; Silk, 2018).

Health disciplines must utilize resources such as the Core Competencies for Collaborative Practice to help achieve the best possible comprehensive person-centered health care approach (“Core Competencies for Interprofessional Collaborative Practice: 2016 Update,” n.d.). Inclusion of this information in nursing curricula would enhance translation of knowledge, increase confidence, and provide information for referrals. IPE would be a logical method to provide knowledge regarding preventive oral services such as oral screening, oral health counseling, and dental referrals.

Purpose and Specific Aims

The specific aims of the study are:

1. Assess the knowledge of nursing students regarding oral health at baseline and after an oral health training intervention.

2. Evaluate students’ level of confidence in providing: (1) oral screening; (2) oral counseling; and (3) referrals to a dental home post intervention.

   Determine practice behaviors of nursing students in clinical settings post intervention.
CHAPTER II: PROMOTING FOUNDATIONS FOR INTERPROFESSIONAL COLLABORATIVE PRACTICE: ORAL HEALTH IN NURSING EDUCATION

Introduction

In the constantly changing world of health care, providers are encouraged to work collaboratively and provide person–centered care. Despite the statement released by the World Health Organization (WHO) regarding the importance of interprofessional education (IPE) and collaboration (IPC), true integration has not been achieved at the student level, specifically relating oral health to overall health. Nurses play a crucial role in the provision of routine oral screenings and counseling to identify conditions that may need further dental care and lessen health disparities. However, optimal oral health education is limited in nursing curricula (Dolce et al., 2012; Pai et al., 2016) and may therefore, not translate as a priority for nurses in patient care. The purpose of this study was to evaluate knowledge, confidence, practice behaviors, and perceived barriers of nursing students to provide preventive oral health services.

Background

Nurses are frequently the first member of the primary care team seen by patients and are in a prime position to complete oral health assessments and provide screenings, counseling and referrals for their patients. As a deficiency in oral health education for the primary care team has been identified, programs such as the Smiles For Life (SFL) National oral health curriculum (Douglass et al., 2007) have developed to disseminate peer–reviewed oral health curriculum in primary care disciplines; however, oral health concepts are still lacking in curricula (Clark et al., 2017; Dolce, 2014; Douglass et al., 2007). Additional frameworks, such as the Qualis Oral Health Delivery Framework, for providing oral health services for primary care providers have been developed to simplify and provide
a calibrated and structured process. (Hummel et al., 2015). A recent four-part report in *Teaching and Learning in Nursing* released oral health content for nursing educators to add to curriculum (J. K. Mitchell et al., 2017; J. Mitchell & Shoemaker, 2017). These resources provide specific content for nurses treating patients at various stages in their life with content focusing on the integrated health team and the role of the nurse in providing preventive oral health services such as observing, counseling and providing referrals in a timely manner (J. K. Mitchell et al., 2017; J. Mitchell & Shoemaker, 2017). The report further discussed common oral health manifestations, disease processes, oral health effects of systemic disease, and preventive oral health services a nurse can provide for each of the four stages of life (J. K. Mitchell et al., 2017; J. Mitchell & Shoemaker, 2017).

Interprofessional education is essential for health care professionals and has evolved to become a required component of many health care accreditation standards (Czarnecki et al., 2014). Research supports that the inclusion of IPE provides a better understanding of oral health promotion and improves quality of patient care (Abou El Fadl et al., 2016; Czarnecki et al., 2014; Otsuka et al., 2016; Sharif et al., 2016; Silk, 2018; Wooten et al., 2011). Therefore, incorporating IPC in the health care curricula may be an effective method of promoting both oral and systemic health in the medical and dental professions (Abou El Fadl et al., 2016; Dolce, 2014; Silk, 2018). Nurses are an integral aspect of the primary health care team, and should be trained to provide oral screening, counseling, and referrals. According to the WHO, “Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. It includes the promotion of health, the prevention of illness, and the care of ill, disabled and dying people” ("WHO | Nursing," n.d.). This definition of the nursing profession charges nurses with the role of providing comprehensive, promotional, and preventive care that encompasses oral health. Inclusion of this information in nursing curricula would enhance translation of knowledge, increase confidence, and
provide information for referrals. IPE would be a logical method to provide knowledge regarding oral screening, oral health counseling, and dental referrals.

**Methods**

*Research Design*

The study employed a pre–, immediate–post–, and post–intervention quasi–experimental survey research design evaluating oral health education in nursing curriculum.

*Data Collection*

The study included 64 first–year nursing students enrolled in the accelerated undergraduate nursing program (ABSN) at the University of North Carolina at Chapel Hill (UNC) registered in a Health Assessment Course. Pre–, immediate–post, and post–intervention surveys were modified using a survey developed for the Prenatal Oral Health Program at UNC School of Dentistry. The original survey, utilized for medical students with a similar intervention, was revised and tailored towards a general oral health assessment for nursing students. Survey questions were focused on the constructs of knowledge, attitudes and behaviors and did not exceed one-page front and back. Individual question formatting included: basic demographic questions; true/false questions on oral health knowledge; four-point Likert scale–type questions (1=strongly disagree, 4=strongly agree) on confidence in providing oral health services, level of agreement regarding their oral health responsibilities as a nurse, willingness to provide oral health services, opinions on current level of oral health in nursing education, and practice behaviors. Additional questions where included in the post-survey to assess inclusion of learned oral health principles during student clinical rotations. The surveys were pilot tested with three nursing students who were not enrolled in the Health Assessment course in spring 2017. Surveys were transferred to a Teleform paper design and responses scanned to ensure accuracy.
All ABSN students enrolled in the Health Assessment Course offered in spring 2017 were asked to participate (n=64). This course, based on the initiation of caring and decision making in nursing practice, addressed concepts and methods of comprehensive health assessment of children, adults, and geriatric patients. The Health Assessment Course is three-credit-hours consisting of two lecture credits and one lab credit. The former precedes the clinical simulation component which both have a two-hour duration. Surveys administered were coded to maintain anonymity, and students were informed that participation in the research was voluntary. Students that did not complete the surveys still received the didactic lecture and clinical simulation and did not have any negative consequences for not participating in the research. Clinical simulation groups included approximately eight to ten students and were held in laboratories in the nursing school. All qualifying students were asked to complete a written consent form to voluntarily participate in the intervention. Once written consent was obtained, a pen and paper pre-survey containing questions regarding knowledge of basic oral health and confidence of providing general oral health counseling was given at the beginning of a class period. A didactic lecture-based intervention was then presented via PowerPoint during the lecture component of the class period. The presentation included (1) extraoral and intraoral anatomy, (2) oral diseases such as oral cancer, gingivitis, periodontitis, and dental caries, (3) common oral health manifestations through the life course, and (4) expectations of health care providers in providing oral health services. A short instructional video from SFL (Douglass et al., 2007; Quinonez et al., 2017) was shown demonstrating the Qualis framework for oral screenings by primary care providers (Hummel et al., 2015; “Oral Health Integration | Qualis Health,” n.d.). Students then dispersed into lab groups held in the laboratories in the nursing school.

Five calibrated dental hygiene (DH) instructors demonstrated basic oral screenings with gloved hands using tongue depressors and flashlights based on the framework shown in the SFL video (Douglass et al., 2007). The calibration session included oral and written instruction for facilitating
case–based learning and utilizing uniform terminology when presenting the oral screening
demonstration to the nursing students.

Upon completion of the demonstrations, students practiced performing an oral screening on
one another. Each laboratory was equipped with all the necessary materials including gloves,
flashlights, and tongue depressors for each student. DH facilitators then provided instructional
content on fluoride varnish application that included verbal instructions, viewing of a SFL instructional
video, and a demonstration using fluoride varnish using paper mouth drawing (Douglas et al, 2007).
Following laboratory learning activities, an immediate post–survey assessing nursing student’s
confidence in providing oral health screenings after receiving the oral health training was
administered. In July 2017, upon completion of ABSN student’s first semester of clinical rotations
during their second semester of nursing school, the same students were asked to complete a delayed
post–survey addressing the same concepts as the pre–survey.

Data Analysis

All statistical analyses were performed using the software SAS 9.4 (SAS Institute Inc., Cary, NC, USA).
Univariate and bivariate analyses were performed. McNemar’s tests were performed on questions of
interest to assess change in the proportion of correct answers at pre– and delayed–post–intervention
knowledge questions. Wilcoxon signed rank tests were performed on variables of interest to assess
median differences in responses at pre– and delayed–post–intervention. Alpha was set at p < 0.05.

Ethical Considerations

This study was reviewed by the University of North Carolina at Chapel Hill Office of Human
Research Ethics and was determined to be exempt from further review (IRB# 16–3087).

Results

Fifty–five (86%) ABSN students completed the pre–survey, 63 (98%) completed the
immediate–post–survey 49 (76%) the post–survey five months after the intervention. The matched
response rate between the pre– and delayed post survey was 69% (n=44). On average, students were 30 years old (standard deviation: 6.7); 73.8% were females and 26.2% males.

Pre–survey results showed that 77% (n=33) of respondents reported having a poor or very poor level of oral health in nursing education. Previous experience with oral screenings were low, at 3.6% (n=2). Similarly, 7.3% (n= 4) reported providing oral counseling, and 7.4% (n = 4) dental referrals prior to the intervention.

The immediate–post–survey gathered qualitative data to gauge nursing student’s opinions of the intervention using open–ended questions. Figure 1 depicts the most common themes derived from the student’s comments, including benefits of having hands–on learning experiences with oral screening, counseling, fluoride varnish application, and referrals. Students also expressed gratification of the IPE experience by learning from the DH educators. Students appreciated the opportunity to interact with the DH dental hygienists by asking questions about what is considered “normal” and “abnormal” and other questions related to oral health.

Table 1 illustrates change in proportion between correct answers for knowledge questions about dental caries, medication use, dental treatment during pregnancy, periodontal disease, and systemic health. Knowledge scores showed a statistically significant increase from pre– to delayed–post–survey in questions regarding dental caries (p = 0.04) and dental treatment during pregnancy (p < 0.0001). Knowledge scores for periodontal disease showed a slight increase but was not statistically significant (p = 0.63).

Questions regarding confidence, willingness, and perceived barriers were included to assess students’ attitudes. Table 2 illustrates median differences in confidence responses from pre– to delayed–post–surveys. Reported self–confidence in providing oral screening and oral counseling showed a statistically significant increase (p<0.0001, p=0.0063) while reported self–confidence regarding providing dental referrals remained neutral (p=0.7158). Willingness scores showed a
statistically significant decrease from pre– to delayed–post–surveys (p<0.0001). However, when asked specifically about the oral health training increasing their willingness to provide preventive oral health services, delayed–post–survey respondents reported being at least “a little” willing to provide oral screenings, oral counseling, and dental referrals (95.7%, 97.9%, 95.7%). Questions regarding the nurse’s role in providing oral screening and counseling remained neutral (p=0.73, p=0.49), but did show a statistically significant increase for providing dental referrals (p=0.02) from pre– to delayed–post–survey responses.

Table 3 shows behaviors reported on delayed–post–survey responses. 36.7% reported providing oral screening for at least one of their patients during clinical rotations, 44.9% reported providing oral counseling for at least one patient, and 8.2% reported providing at least one dental referral when indicated.

**Discussion**

This study aimed to evaluate knowledge, confidence, practice behaviors, and perceived barriers of nursing students regarding preventive oral health services before and after a didactic and clinical simulation intervention. Study investigators first gathered baseline information about students’ oral health knowledge, willingness to implement oral health services in practice, confidence in providing these services, and whether they had provided these services prior to the date of the intervention. Pre–survey data indicated that 60% of the respondents were knowledgeable on concepts of oral health but were not confident in providing preventive oral health services such as oral screening, counseling, and dental referrals. Students indicated a willingness to implement oral health services in practice and believed that it was within the nurse’s role. These findings remain consistent with similar intervention–based studies in IPE as students tend to feel optimistic about implementing services but do not have the confidence to do so prior to study initiation (Golinveaux et
Research shows that students have a higher level of motivation in providing services when they feel they have received adequate instruction (Golinveaux et al., 2013).

Immediate–post–survey results demonstrated that students viewed the IPE experience as very positive. They enjoyed the multifaceted approach through the didactic and clinical simulation components. Students expressed that working through the clinical simulation case along with the DH educators allowed them to grasp a true understanding of the roles of the dental hygienist and the nurses’ scope of practice in regard to oral health delivery. These findings remain consistent with IPE research regarding the cultivation of the collaborative team environment (Anders et al., 2016; Haber et al., 2017). This aspect is important as the success of interprofessional practice is dependent upon the ability of health care professionals to work in teams, which should begin with an understanding of roles and responsibilities and potential contributions to the team from each individual discipline. The delayed–post–intervention showed an increase in knowledge among students in concepts of oral health. Self–reported levels of confidence and willingness also increased for oral screenings and counseling, meaning students may be more likely to provide preventive oral health services.

Although the intervention proved successful on many aspects, there were a few identified areas of weaknesses and barriers in the delayed–post–intervention survey primarily in reference to the provision of dental referrals. Due to the design as a pilot study, each of the various clinical rotation sites were equipped with limited resources and calibration for providing dental referrals for patients. Student rotations were primarily held in the hospital medical–surgical nursing setting in various services, which means that student/patient interaction varied greatly. This setting does not afford many opportunities for the provision of these specific preventive oral health services. Additionally, faculty may not have been receptive or knowledgeable about dental referral information and may not have had the information to provide for the students. Regardless, the students did self–report an increased willingness to provide the services and did provide some of these services when
opportunities arose. Additional perceived barriers to take into consideration would be a lack of oral hygiene supplies, lack of oral health calibration between nursing clinical faculty, and limited time for provision of oral health services.

This IPL experience allowed the investigators to examine the feasibility of incorporating IPE and prompts future studies to include a learning environment for both nurses and DH students to collaborate on patient care. This study thus provides a model for IPE activities and could influence improved patient health outcomes. IPE activities may increase competence of health care providers as they are able to truly understand their roles in practice and the roles of other health care providers. These concepts can be taken into the workforce as health care is so quickly approaching an integrated model of collaborative practice. Future studies should include more interaction between students in both health disciplines. Such interaction may include pre-assigned case study reviews accompanied with round-table discussion of roles and responsibilities of each discipline. Students from other health disciplines may also be included to expand students’ understanding of roles of health care providers. Future studies must also include an ongoing evaluation of oral health content in health disciplines to make sure that all students are receiving calibrated information.

The inclusion of the concepts of IPL in students’ first year of nursing school should be considered a strength as these students are able to include the received information throughout their program and upon graduation. Having DH educators delivering the information was very well-received as students were able to understand the relevance and importance of preventive oral health services and the relationship to systemic health.

The oral health care delivery system of today will not be the same in 2040 (Weintraub, 2017), and we must work as a team to educate health care professionals. Nurses provide care to all people in many different environments. They have the ability to reach patients in long-term care facilities, hospice, and intensive care units where patients would be less likely to visit a dental practice for
routine care. These environments present opportunities to provide oral care services that may otherwise not be provided. This places the burden of identifying and treating oral complications on the primary care providers. Inadequate or inaccurate training may result in lack of or misdiagnosis of oral findings that could delay or prolong care and could cause unnecessary pain to the patient. It is important to provide resources for primary care providers such as SFL (Douglass et al., 2007; Quinonez et al., 2017) as programs like these can be easily incorporated into nursing curricula. Not only do these programs add oral health content to nursing curricula but are also resources that can be taken to practice and can be used for patient care.

Another example is access to dental care services for children. Most children are covered by private or public insurance and receive regular well–child visits. The US Preventive Service Task Force reviewed and supported fluoride in the medical home (Chou et al., 2014). These appointments with primary care providers can serve as an opportune time to provide oral screening, educational counseling about oral health, and possible referrals, when indicated. As the students were provided with the unique opportunity of practicing fluoride application, they are now equipped with the knowledge to provide fluoride varnish therapy as well. Thinking from a broader perspective and a more comprehensive person–centered approach to care will enhance patient outcomes and ultimately improve delivery of care for patients.

There were limitations identified in this study. The first is the absence of a control group. As a pilot for inclusion of this content into the nursing curricula and Health Assessment course, it was a greater benefit for the students to receive the content and clinical simulation so that all students would be getting consistent material as part of their curriculum. Future studies should identify groups of students in a similar program that did not receive an oral health intervention so as to have a means of comparison for practice behaviors post–clinical rotations. Utilizing a larger sample size will also provide results that can be more generalizable and allow for more sophisticated statistical analysis to
move us towards predictors of success in oral health education, which can further inform more personalized education. Although inclusion of interprofessional teamwork so early in nursing curriculum may be a benefit, it may also be considered a limitation as student had not yet had patient interaction prior to the intervention. Future studies should also consider an IPE experience to include students from additional disciplines with opportunities to teach one another and learn together, to provide a more expanded IPE experience. Additionally, reporting–bias may have played a role in the data from the questionnaires.

Concluding Comments

Interprofessional didactic and simulated oral health educational opportunities increased knowledge and confidence among ABSN students to deliver preventive oral health services in practice. Incorporating IPL in nursing curriculum is recommended to increase student willingness to participate in collaborative practice in their future profession as intervention can have a positive impact on behavior. IPE allows students to develop optimistic attitudes towards open communication between health disciplines. This study supports IPE as a method to increase students’ self-confidence to provide preventive oral health services in the medical home. Future IPE research should include multiple disciplines so true collaborative practice and recognition of the value of individual professional roles can be achieved.
### APPENDIX

**Table 1.** Oral health knowledge change of University of North Carolina at Chapel Hill (UNC) Accelerated Bachelor of Nursing Program (ABSN) students

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre–Survey Total Number</th>
<th>Pre–Survey Correct Answers</th>
<th>Delayed–Post–Survey (a) Total Number</th>
<th>Delayed–Post–Survey (a) Correct Answers</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental Caries</td>
<td>44 (100%)</td>
<td>33 (75%)</td>
<td>44 (100%)</td>
<td>41 (93%)</td>
<td>p=0.04</td>
</tr>
<tr>
<td>Medication Use</td>
<td>44 (100%)</td>
<td>40 (91%)</td>
<td>44 (100%)</td>
<td>38 (86%)</td>
<td>p=0.73</td>
</tr>
<tr>
<td>Dental Treatment During Pregnancy</td>
<td>44 (100%)</td>
<td>27 (61%)</td>
<td>44 (100%)</td>
<td>43 (98%)</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Periodontal Disease</td>
<td>44 (100%)</td>
<td>41 (93%)</td>
<td>44 (100%)</td>
<td>43 (98%)</td>
<td>p=0.63</td>
</tr>
<tr>
<td>Systemic Health</td>
<td>44 (100%)</td>
<td>44 (100%)</td>
<td>44 (100%)</td>
<td>42 (96%)</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(a) Five months post intervention.
Table 2. UNC ABSN students’ self-reported confidence change in providing preventive oral health services (screen, counsel, refer)

<table>
<thead>
<tr>
<th></th>
<th>Pre-Survey</th>
<th>Delayed–Post–Survey(^{(a)})</th>
<th>Total Number</th>
<th>Median (Q1–Q3)</th>
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\(^{(a)}\) Five months post intervention following clinical rotations.
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</tr>
<tr>
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</table>

*(a) Five months post intervention following clinical rotations.*
Figure 1. Immediate post-survey comments ©Wordle.net
REFERENCES


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