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# DENTAL HYGIENE PROTOCOL USED BY NURSES IN THE HOSPITAL SETTING A PILOT SURVEY

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DENTAL HYGIENE PROTOCOL USED BY NURSES IN THE HOSPITAL SETTING

A PILOT SURVEY

BY

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Bachelor of Science in Dental Hygiene  
University Of New Mexico  
2013

THESIS

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The University of New Mexico  
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# DENTAL HYGIENE PROTOCOL USED BY NURSES IN HOSPITAL SETTING

## A PILOT STUDY

By

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### ABSTRACT

Oral care is often dismissed or undervalued in the overall health and wellness of individuals and can be detrimental to patients in hospital-like settings. Although dental hygienists are educated to practice in alternative practice settings like pediatric offices, hospitals, nursing homes, schools and federally qualified health centers they are underutilized in such arenas. The purpose of this study is to learn about the University of New Mexico Hospital's (UNMH) current oral hygiene care practices and protocols, nurses' values and interests in inter-professional collaboration with a dental hygienist.

A feedback survey was created and intended recipients included all UNMH nurses regardless of specialty unit. However, this survey was disseminated to 240 UNMH Intensive Care Unit nurses. Of the 240 nurses only 28 (11.6%) opted to participate in this survey study. The result of this study revealed the majority of nurses: value oral hygiene care in themselves and in their patients; report their nursing education did prepare them

in performing oral hygiene care on patients; interested in inter-professional collaboration with a dental provider like a dental hygienist.

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# Chapter 1

## Introduction

Dental hygiene care needs to be integrated into medical care facilities such as hospitals or long-term care facilities as a way to advocate for a patients' overall health. Medically compromised patients who are hospitalized or are undergoing treatment often times need oral health education and/or oral health interventions. Oral care is often not a priority in the daily care regimen for residents of long-term care institutions. (1) Poor oral health has been identified as a precipitating factor for many serious health conditions such as aspiration pneumonia, malnutrition, and heart disease. (2-6)

Oral care is often dismissed or undervalued in the overall health and wellness of individuals and can be detrimental to patients in hospital-like settings. Although dental hygienists are educated to practice in alternative practice settings like pediatric offices, hospitals, nursing homes, schools and federally qualified health centers they are underutilized in such arenas. The purpose of this study is to learn about the University of New Mexico Hospital's (UNMH) current oral hygiene care practices and protocols, nurses' values and interests in inter-professional collaboration with a dental hygienist.

### Statement of the Problem

How and in what ways can dental hygienists be integrated in hospital-like settings? What is the level of receptiveness by nursing staff at the University of New Mexico Hospital in integrating dental hygienists in hospital-like settings?

### Significance of the Problem

In 2000, the US Surgeon General put out a report, *Oral Health in America*, with initiatives to focus on improving the oral health of American's by increasing access of care. (7) As a result, there is increased awareness among medical and dental providers regarding the connection between oral health, systemic disease, and overall health and wellness (4, 8-15). More recently, health providers such as physicians, nurses, nurse practitioners, physician assistants, speech and language pathologists, and dieticians are realizing the validity of the oral-systemic link.

Oropharyngeal bacteria and inflammation have been associated with chronic inflammatory systemic diseases such as cardiovascular disease, endocarditis, diabetes, obesity, prosthetic joint infections, fetal development, pulmonary disease, rheumatoid arthritis, osteoporosis, chronic obstructive pulmonary disease and chronic kidney disease. (8-15) In addition, medical treatments used to treat systemic disease often times affect the mouth. More specifically, radiation therapy (RT), chemotherapy, and some medications will cause adverse effects directly or indirectly on oral structures, and they may be acute or chronic. These adverse effects include: mucositis, xerostomia, loss of taste, infections, oral candida, dental caries, trismus, and osteonecrosis, to name a few. (16, 17)

There is scientific evidence that proves the etiology of aspiration pneumonia is from colonized oropharyngeal bacteria (*Actinobacillus actinomycetemcomitans*, *Actinomyces israeli*, *Capriocytophaga* species, *Eikenella corrodens*, *Fusobacterium nucleatum*, *Porphyromonas gingivalis*, *Prevotella intermedia*, *Streptococcus constellatus* and *Pseudomonas aeruginosa*), the same bacteria found in dental plaque biofilms. (1, 2,

4, 5, 18, 19) Aspiration pneumonia occurs when micro-aspiration of oropharyngeal bacteria into the trachea and lungs, resulting in either unilateral or bilateral lung infection. The oral cavity is proximal and adjoins with the trachea and the right main stem bronchus and is positioned more vertically than the left bronchus. This anatomical configuration allows for easy transport of the aspirate and can serve as a natural portal for the colonization of respiratory pathogens. (19) It is imperative a patient has a clean mouth knowing that the oral cavity is often the site of entry for life-sustaining interventions such as endotracheal intubation and orogastric tubes for nutrition. With thorough dental plaque biofilm removal on a daily basis, prevention of aspiration pneumonia can be achieved.

In nursing education, oral care is seen as an intervention of patient comfort instead of a necessity, thus, priority of oral care is lowered. (1, 18, 20) In nursing education and training there is a lack of knowledge regarding the importance of oral care, being that oral care is often delegated to personal support workers (PSW) who also lack formal training and are overwhelmed with providing oral care. (1)

Nurses are often overworked and overwhelmed due to the number of diverse tasks that are not limited to providing direct patient care. (1) Direct patient care involves bedside tasks, like establishing intravenous access and administering medications, etc. This is also the time when nurses would help a patient with oral care. Indirect patient care includes charting/documentation, preparing medications, and coordinating care/communication. Non-nursing tasks include searching for equipment and supplies. In fact, one study found that barriers to providing oral care included workload, time and

resource constraints and the difficulty providing this care to patients with challenging behaviors. Due to a heavy workload and time constraints, nursing staff placed oral care as of low priority compared to other tasks like diaper changes. “We know [oral care] is really important, but cleaning a diaper takes a little bit more priority than mouth care.” (1)

Resource constraints included a lack of access to supplies and equipment that they considered appropriate and useful, such as suction, toothbrushes and toothpaste. The final barrier was having to deal with patients with challenging behaviors that either refuse care or put up a fight or act as though they are being abused. As a result, many nurses and personal support workers oblige the patient and do not provide daily oral care. (1)

Seriously ill patients in hospitals and long-term care facilities who cannot care for themselves rely on others for all hygiene care, including oral hygiene care. Implications of inadequate, subpar oral care in hospital-like settings are significant enough that it needs to be addressed. Dental hygienists might be the missing link in helping medical professionals meet their patients’ unmet oral health care needs. Having a dental hygienist provide proper oral care knowledge in house, may mitigate the exacerbation of systemic health complications, which may lead to a shorter hospital if a patient has a quicker recovery time.

Dental hygienists, whose specialize in preventive oral care, are ideal in filling the dental provision gap in medicine. They could provide oral care education and interventions and to work collaboratively with patients’ medical teams, such as nurses,

doctors, dietitians, etc. to help provide optimal multifaceted care in hospitals and long-term care facilities.

## Operational Definitions

**Inter-professional team-** All health professionals, such as dental hygienists, nurses, doctors, dieticians, etc., who deliver patient-centered care, that emphasize evidence-based practice and work collaboratively with each other to provide the best possible care to the patients they serve.

**Inter-professional care-** all health professionals who provide patient-centered care, who are members of inter-professional teams, who emphasize evidence-based practice and use quality improvement approaches. (as defined by the IOM)

**Patient-centered care-** looks out for the best interest of the patient; addressing health conditions, manage risk factors, oral health diagnosis and is respectful of and responsive to individual patient preferences, need, and values that help formulate a care plan.

**Oral care-** oral hygiene interventions that help to remove bacteria that cause oral disease or systemic disease or implications, through brushing, flossing, dental hygiene instrumentation, topical fluoride placement, etc.

**Hospital-like settings-** An institution for medical, surgical, obstetric, or psychiatric care and treatment of patients; having the function of a hospital, often with inpatient care.

**Long-term care facilities-** A facility that provides rehabilitative, restorative, and/or ongoing skilled nursing care to patients or residents in need of assistance with activities

of daily living; nursing homes, rehabilitation facilities, inpatient behavioral health facilities, and long-term chronic care hospitals.

## Chapter 2

### Literature Review

This review of literature aims to assess the need for dental hygienists to practice in alternative practice settings such as long-term care facilities and/or hospital-like settings. Increased awareness among medical and dental providers regarding the connection between oral health, systemic disease, and overall health and wellness has given rise to an emphasis on inter-professional education and practice collaboration.

Medical and dental literature was reviewed using PubMed/MeSH search engines to access the database Medline focusing on keywords such as “oral health and systemic health,” “inter-professional collaboration dental” and once articles of relevance were found, references from such articles were also researched for relevance or additional pertinent information.

General information regarding oral systemic health, the need for dental hygienist in alternative practice settings like hospitals and/or long-term care facilities, the receptiveness of medical providers, and introduction of dental hygienists into such arenas are discussed. The role of dental hygienists in alternative practice settings is to provide oral health education and necessary interventions to treat the whole patient in hopes of improving quality of life.

#### A Push to Address Oral Health in the US

In 2000, the US Surgeon General published, *Oral Health in America*, which focused on oral disparities in the United States in addition to the oral and systemic link. Access to care was named as a primary cause of the United States high rate of oral

disease. (21) Three years later, a follow up report from the US Department of Health and Human Services was issued, *National Call to Action to Promote Oral Health*, supporting changes in the research and delivery of oral health care. (22) The ADHA responded with ways of advancing the profession of dental hygiene to help meet the needs of the American public with goal attainment at 5 years and 20 years. Public health was named as one of the six areas of focus to which vulnerable groups like minority, low-income, certain special care groups (elderly and disabled), and medically underserved populations, were named. (23)

Within the last two decades, the United States oral health status has seen little improvement, according to Dr. Marcia Brand, executive director of the National Inter-professional Initiative on Oral Health (NIIOH). (24) Brand states, “We need a different approach to providing oral health care, one that is “upstream,” preventive focused, engages primary care providers, and is patient-centered.” Many medical organizations and groups have been receptive and welcoming to the idea of oral health integration in order to help properly treat and serve the patient from head to toe.

Qualis Health published a white paper outline in 2015, *Oral Health: An Essential Component of Primary Care*, that discussed preparing primary care medical providers with the skills to inquire about a patients’ current oral health, provide preventive oral health interventions and education, and obtain a list of dental providers for patient referral. In some areas of the country, like New York, where there is a push for primary care medical providers to put the mouth back into the body, clinical exams of the “head, eyes, ears, nose and throat” added “oral cavity” to the exam list. (25)

The need for a dental provider with formal oral health training is needed in the medical sector to not only help medical providers assess oral disease but also to help alleviate access to care, especially in severely immunocompromised patients who are unable to have regular dental prophylaxis' or basic oral care interventions. It is time for dental hygienists to work collaboratively with medical teams to provide oral health education and interventions that are patient specific. However, the majority of dental hygiene professionals are not embracing this collaboration with white knuckle intensity, as they should. (26)

#### Inter-professional Education: Collaboration of Medical and Dental

The Institute of Medicine, in 2003, proposed the future of inter-professional care (titled *Health Professions Education: A Bridge to Quality*) being provided by, but not limited to, dental hygienists, nurses, nurse practitioners, and physician assistants to:

- Deliver patient-centered care
- Be members of inter-professional teams
- Emphasize evidence-based practice
- Use quality improvement approaches and informatics

As a result, multiple organizations endorsed the idea of inter-professional collaboration. In fact, the Liaison Committee on Medical Education (LMCE), the Inter-professional Collaborative, and the World Health Organization (WHO) now promote inter-professional team-based care and rank it of most importance. Additional organizations, such as the American Medical Colleges (AAMC) and Commission on Dental

Accreditation (CODA) promote and advocate for inter-professional collaboration between dental and medical providers.

Inter-professional collaboration has become a critical component of accreditation standards in dentistry and medicine. Colleges and universities are now recognizing the importance of creating inter-professional relationships, between medical and dental students early on (while in school), in hopes of continued inter-professional collaboration post-graduation. The Inter-professional Collaborative states that students “must engage diverse health care professionals who complement one’s own professional expertise, as well as associated resources, to develop strategies to meet specific patient care needs.” (27)

However, a recent study done on inter-professional education in US dental hygiene programs reveal that there is still a lack of inter-professional education among potential partners. The studies survey of dental hygiene program directors revealed logistical challenges such a schedule coordination and curriculum overload and faculty development as obstacles to inter-professional education amongst dental hygiene students and other student health disciplines. Hence, it is suggested that future research be on developing inter-professional education curricula to help dental hygiene programs engage and contribute to developing inter-professional care. (28)

#### Medical and Dental Inter-professional Collaborations

In 2011, a study out of Toronto, Canada formed a focus group to explore the different perspectives that nurses, dental hygienists, speech and language pathologist’s (SLP), personal support workers and directors of nursing care have regarding oral care

provision in long-term care settings and how these different professional perspectives might influence the activities and processes involved in the delivery of oral care.(1) Oral care is often times not a priority in the daily care regimen for residents of long-term care institutions. This study revealed nursing staff are extremely important in daily oral care maintenance and monitoring. All interviewed nurses, including directors of nursing care, felt daily oral care was a routine of their daily duties, however, the need to perform oral care on patients was based off of visible indicators likes remnants of food particles, dried lips, coated tongues, slimy mouths, and blood in rinse water or apparent oral malodor/bad breath. These visible indicators need to be addressed, especially being that many of these signs indicate the presence of oral disease. Published research revealed that some nurses perform oral care as a means of comfort, find the task to be unpleasant, and rank of low priority (18). Nursing education curricula reveals very little emphasis on the importance and practice of oral care on patients. (1)

In nursing education, oral hygiene care is seen as an intervention of patient comfort instead of a necessity, thus, priority of oral care is lowered. (18, 29) Nurses of this study perceived oral health as a means of societal acceptance; they wanted their patients to be visually clean and smell clean. Speech and Language Pathologists (SLP's) seemed of most concern of the oral care status of their patients who they felt were not receiving adequate regular oral care from nursing staff. SLP's mentioned providing patient oral care (toothbrushing) when they felt oral care was lacking. SLP's view oral health as a means of prevention; prevention of pain and prevention of aspiration

pneumonia. Whereas, the dental hygienists of this study viewed oral health as means of minimizing risk factors associated with oral disease.

The results of this study enforced oral health interventions in long-term care facilities as imperative for the patients' overall health and quality of life. Daily oral care for patients may be a nurse's daily task but SLP and dental hygienists can play an important role through oral assessment, patient advocacy, and educating nurses and personal support workers (PSW) as to why oral care is of importance to the profession of SLP's and dental hygienists.

Not long after *the Health care professionals' perspectives on oral health care for long-term care residents: nursing staff, speech-language pathologists and dental hygienists* study was published, the University of New York designed a collaborative program between the nursing program and dental school after identifying barriers to quality oral healthcare which included: lack of attention to oral health by non-dental health care professionals (e.g., nurses, pharmacists, physicians and physician assistants) and inadequate education of non-dental health care professionals in basic oral health. (29) As a result, New York University College of Nursing and NYU College of Dentistry partnered up to design the Oral Health Nursing Education and Practice (OHNEP), a national initiative aimed at preparing the nurse workforce with the competencies to prioritize oral disease prevention and health promotion, provide evidence-based oral health care in a variety of practice settings, and collaborate in inter-professional teams across the health care system to improve access to care and reduce oral health disparities. Nursing school faculty at NYU attended a *Smiles for Life: A National Oral*

*Health Curriculum* workshop which helped articulate competencies for oral health curriculum development to be used at NYU College of Nursing.

Following the above study, The New York University College of Dentistry Dental Hygiene Program, sparked the discussion of dental hygienists taking on the role of oral health manager, where the dental hygienist would identify disease risk, promote health, and enlist the resources of the patient and other providers for resolving identified health problems in areas of diabetes, tobacco use/tobacco cessation, and hypertension. (6) Being that dental hygienists often engage with patients twice per year, which is often times more frequent than with a patient's primary care provider, they are in the ideal position to incorporate and monitor oral and systemic conditions. Integration of primary care in oral care settings is also important to engage with the patient's care team and build inter-professional relationships to serve the "whole" patient.

#### A Population in Need of Inter-professional Collaboration

Patients of long-term care facilities and hospitals who are elderly, chronically or critically ill, that depend on ventilators, who present with poor oral health and oropharyngeal bacteria are at greater risk of complicating their health. There is a definite oral and systemic link which has been found in individuals with diabetes, cardiovascular disease, obesity, endocarditis, prosthetic joint infections, fetal development, pulmonary disease, rheumatoid arthritis, osteoporosis, chronic obstructive pulmonary disease and chronic kidney failure. (2-6) These systemic diseases can be exacerbated by uncontrolled oropharyngeal bacteria's; thus, it is imperative that patients who are

immunocompromised to maintain good oral hygiene practices and present with minimal oropharyngeal bacteria.

Oropharyngeal bacteria from dental plaque biofilm have been isolated from the respiratory system of patients with aspiration pneumonias which are a major cause of morbidity and mortality among patients who are immunocompromised or vulnerable. (2-6) Strong evidence indicates that preventions of aspiration pneumonia can be achieved with thorough dental plaque and biofilm removal on a daily basis. (19) Often times these patients cannot care for themselves and are reliant upon others (nurses, caregivers, family, etc.) for all hygiene care, including oral hygiene care. Thus, it is imperative that the patient has a care team that values oral health, is aware of medical treatment side effects that manifest in the mouth, and avoid exacerbating the patient's health. A clean mouth is crucial because the oral cavity is often the site of entry for life-sustaining interventions such as endotracheal intubation and orogastric tubes for nutrition. (19)

#### Dental Hygienist's Role in long-term care facilities and hospital-like settings

Dental hygienists are deeply-vested in providing patient-centered preventive care and have a broad scientific base of knowledge making them ideal patient advocates in long-term care facilities or hospital-like settings. Dental hygienists have the appropriate expertise to provide efficacious solutions, through preventive oral care, therapeutic services, and education. With additional leadership skills and education and management training, the dental hygienist should be the point of contact for oral health care within collaborative, inter-professional teams. (26)

## The Inter-professional Dental Hygienists Role in Alternative Practice Settings

There is a high-risk population of people in long-term care facilities and hospital-like settings with systemic health issues who need comprehensive care, which includes oral care. Increased awareness among medical and dental providers regarding the connection between oral health, systemic disease, and overall health and wellness has given rise to emphasis on inter-professional education and collaboration. (19, 30)

### Summary

Scholarly literature of the last five years discusses the importance of inter-professional collaboration to deliver comprehensive patient care. In states where collaborative practice licensure is allowed dental hygienists can position themselves in these setting to: educate patient care providers like nurses and doctors on the importance of good oral hygiene care during a hospital stay; educate patients on the importance of good oral hygiene care during and after a hospital stay and direct patients to dental resources after discharge.

## Chapter 3

### Methods and Materials

#### Introduction

This descriptive research survey was supposed to evaluate the University of New Mexico Hospital (UNMH) nurses:

- a) Values on oral health
- a) Views on patients received oral hygiene while staying at the hospital
- b) Receptiveness to adding a preventive oral health professional to the team

With the use of a feedback survey, this study aimed to identify nursing staffs' thoughts and professional opinions in regards to the care and management of hospitalized patients' oral health. This assessment was used to help define this information.

#### Sample Description

Study participants included a convenience sample of UNMH nursing staff currently employed at the University of New Mexico Hospital. Contact information was obtained for nursing staff via a UNMH contact. REDCap is a HIPPA compliant tool used for conducting health surveys and for managing survey responses. It is hosted by the University of New Mexico Center for Clinical and Translational Services (UNMCTSC) and stores data on a secure server.

#### Research/Survey Design

A web-based (online) survey was sent via email to UNMH nursing REDCap. Two reminder emails with the survey hyperlink were emailed two weeks after and three weeks after the initial survey was sent, to allow those who had not completed the survey to do so. Participants were only allowed to take the survey once. The survey was available/open for one month. Participant's informed consent was obtained when email recipients/nurses choose to click on the survey hyperlink.

The institutional review board (IRB) of the University of New Mexico did grant approval for this study prior to distribution. The survey was developed by the primary investigator with the help of REDCap final feedback/input from the primary investigator's thesis committee.

This survey included multiple-choice items, closed-ended and open-ended questions. This survey was designed to explore three main themes:

1. Nursing staffs' values on oral health.
  - How many times per day do you brush your teeth?
  - How often do you floss your teeth?
  - On average, how many times per year do you have preventive dental care  
i.e. a dental cleaning with dental hygienist?
2. Nursing staffs' views on patients received oral hygiene while staying at the hospital.
  - If a patient is able to perform daily tooth brushing when hospitalized, are they encouraged to do so while under your care?

- Who helps patients that are unable to perform their own tooth brushing during a hospital stay?
  - Do you feel comfortable performing tooth brushing on a patient?
  - Do you feel like your nursing education prepared you in performing oral hygiene care on a patient?
  - Do you feel patients who have daily tooth brushing are at a reduced risk for additional health complications or disease exacerbation?
3. Nursing staffs' receptiveness of adding a preventive oral health professional to the patient care team (like a dental hygienist).
- If you had a question regarding a patients' oral health, do you have the proper resources to assist you?
  - Do you feel that you, the care staff and patient could benefit from inter-professional collaboration with a dental provider like a dental hygienist?

These questions were used to establish this study and give more enhanced direction towards implementing a program in the future.

#### Potential Confounders

Potential confounders that can affect the continuity of this survey study can be group selection and group selection interaction effect. For example, when the survey respondents are asked what their specialty is, it may be possible to assess whether responses cluster by unit. Being that the target population all work together and interact together often this could skew responses. Possible limitations of the survey include: the

amount of quantitative and qualitative data obtained from the respondents, length of the survey, and question ambiguity.

#### Data Collection

Nursing staff survey responses were collected using a REDCap. The data collected was used to capture the nursing staff's opinions and thoughts about oral health practices and care of patients under their supervision at UNMH. The survey was open for one month and could only be taken in one sitting.

#### Data Analysis

This study's conclusions are based on the results of the completed and submitted surveys. Responses to the survey were evaluated in relation to the three main themes (as discussed earlier/above). Multiple-choice and closed-ended questions are to be grouped and charted. Open-ended responses are grouped on likeness, interpreted and charted.

Frequencies and percentages were used to summarize survey response data.

Contingency tables were used to assess the association between nursing staff values on oral health and a) their views on patients receiving oral hygiene while in the hospital and b) their receptiveness to adding a preventive oral health professional to the patient care team.

#### Sample size considerations

The plan was to distribute 2,300 surveys to UNMH nurses. Assuming a response rate of 20% to 25% it is expected that about 460 to 575 UNMH nurses will respond to the

survey. Under these conditions the margin of error for description of a binary variable would be between 4 and 5% (Table 1).

*Table 1. Expected Margin of Error Based Off Response Rate*

N	Margin of Error (%)
400	4.9
425	4.8
450	4.6
475	4.5
500	4.4
525	4.3
550	4.2
575	4.1
600	4.0

Contingency tables were to be used to assess the association between nursing staff values on oral health and their:

- a) Views on patients receiving oral hygiene
- b) Their receptiveness to adding a preventive oral health professional to the team

Table 2 was to be used to evaluate nursing staff values on oral health and their comfort/willingness to perform oral hygiene care such as toothbrushing on a patient. Expected distributions of responses for selected survey questions are shown below with column percentages shown in parenthesis and n values.

*Table 2. Guesstimate: Comfort with Brushing Patients Teeth in Relation to Participant Characteristics*

		Do you feel comfortable performing oral care i.e. toothbrushing on a patient?	
		Yes	No
	0	1(5)	22(95)

How many times per day do you brush your teeth?	1	18(20)	74(80)
	2	258(80)	64(20)
	3+	22(95)	1(5)
How often do you floss your teeth?	Daily	124(90)	14(10)
	Occasionally	129(80)	32(20)
	Rarely	18(20)	74(80)
	Never	10(5)	59(95)
On average, how many times per year do you have preventive dental care i.e. a dental cleaning with dental hygienist?	0	1(5)	22(95)
	Once a Year	18(20)	74(80)
	Twice a Year	258(80)	64(20)
	Three or More Times a Year	22(95)	1(5)

Table 2 was populated with expected cell frequencies to assess statistical power. Daily toothbrushing and comfort combined categories for brushing frequencies into 0-1 vs. 2-3+ for a 2x2 analysis a statistically significant result ( $P < 0.001$ , OR = 21.8 95% CI 12.4-38.2). With effect sizes this large statistical power will be >90%.

Expected frequencies for other questions also suggest high power for most questions.

Table 3 was used to evaluate the nursing staff's education in performing oral hygiene and how it relates to disease exacerbation.

*Table 3. Guesstimate: Nurses Oral Hygiene Education in Relation to Disease Exacerbation*

		Do you feel patients who have daily toothbrushing are at a reduced risk for additional health complications or disease exacerbation?	
		Yes	No
Do you feel like your nursing education prepared you in performing oral hygiene care on a patient?	Yes	145(90)	16(10)
	No	149.5(50)	149.5(50)

Table 4 was used to evaluate nursing staff's oral hygiene education and receptiveness in having inter-professional collaboration with a dental hygienist.

*Table 4. Guesstimate: Nurses Oral Hygiene Education in Relation to Inter-professional Collaboration*

		Do you feel that you, the care staff and patient could benefit from inter-professional collaboration with a dental provider like a dental hygienist?	
Do you feel like your nursing education prepared you in performing oral hygiene care on a patient?		Yes	No
Yes		97(60)	64(40)
No		224(75)	75(25)

Table 5 was used to evaluate nursing staff's comfort/willingness to perform oral hygiene care such as toothbrushing on a patient and receptiveness in having inter-professional collaboration with a dental hygienist.

*Table 5. Guesstimate: Nurses Comfort with Patient Oral Care in Relation to Inter-professional Collaboration*

		Do you feel that you, the care staff and patient could benefit from inter-professional collaboration with a dental provider like a dental hygienist?	
Do you feel comfortable performing oral care i.e. toothbrushing on a patient?		Yes	No
Yes		7(5)	131(95)
No		290(90)	32(10)

## Chapter 4

### Results, Discussion and Conclusion

#### Summary of Results

The survey opened on Friday, September 7, 2018 with the Informed Consent Cover Letter and live REDCAP survey link. It was emailed to my UNMH contact person and her ICU unit director to disseminate to all UNMH nurses. A reminder email was sent out on Friday, September 21, 2018 and another on Friday, September 28, 2018. The survey was intended to be sent to all UNMH nurses, totally 2,300 nurses, however it was only disseminated to 240 nurses working in the following adult intensive care units: Medical Intensive Care (MIC), Trauma Surgical Intensive Care (TSIC) and Neuroscience Intensive Care (NIC).

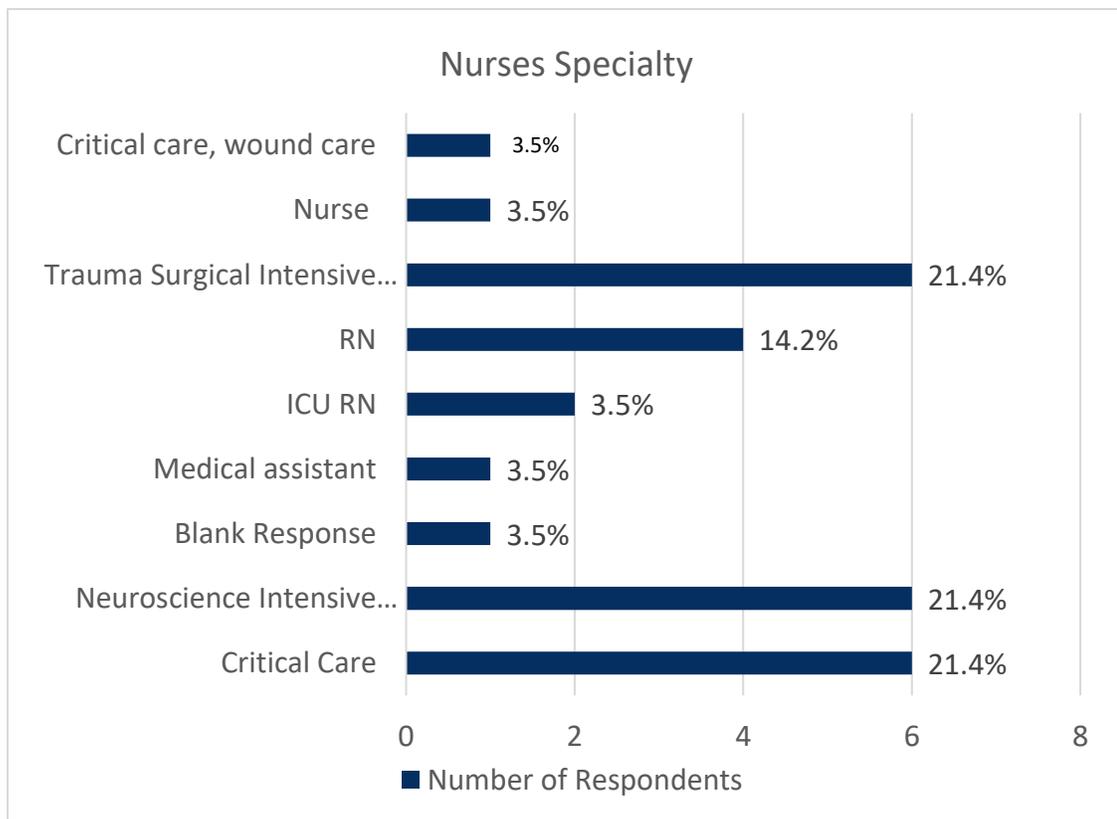
REDCAP recorded 29 survey participants however one of the 29 surveys was returned incomplete, only answering the first three questions: how many times per day do you brush your teeth; how often do you floss your teeth; on average, how many times per year do you have preventive dental care such as dental cleaning with dental a dental hygienist. One participant failed to answer how often they have preventive dental care such as a dental cleaning with a dental hygienist. Another selected questions to answer, failing to answer the following three questions: what is your specialty; if your patient is able to perform daily toothbrushing while hospitalized, are they encouraged to do so under your care; if you had a question regarding a patients' oral health, do you have the proper

resources to assist you. Thus, 28 out of 240 surveys could be used for data collection. Response rate was calculated at 8.5%.

*Specialty*

Survey respondents report their specialty as Trauma Surgical Intensive Care (6, 21.4%), Neuroscience Intensive Care (6, 21.4%), Critical Care (6, 21.4%), Registered Nurse (4, 14.2%), Intensive Care Registered Nurse (2, 7.14%), Critical Care, Wound Care (1, 3.5%), Nurse (1, 3.5%), Medical Assistant (1, 3.5%) and no response (1, 3.5%) (Figure 1).

*Figure 1. Surveyed Nurses Response to Specialty*



*Respondents Value of Personal Oral Health*

The majority of the surveyed respondents report brushing twice daily (19, 67.8%) (Figure 2), flossing occasionally (12, 42.8%) or daily (11, 39.2%) (Figure 3), and maintaining bi-annual preventive dental care (23, 82.1%) (Figure 4).

Figure 2. Surveyed Nurses Response to Personal Oral Hygiene- Frequency of Daily Toothbrushing

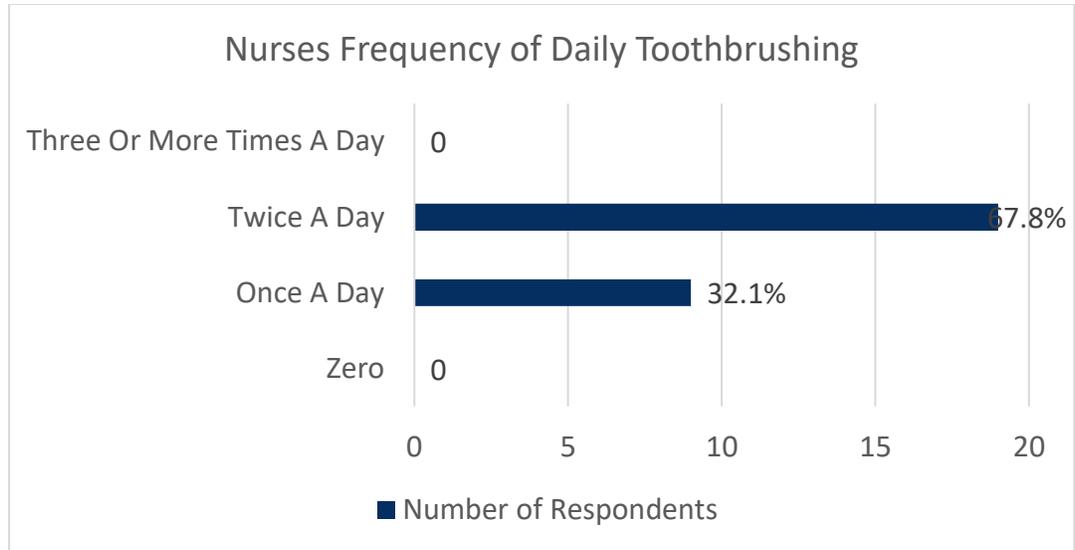


Figure 3. Surveyed Nurses Response to Personal Oral Hygiene- Frequency of Flossing

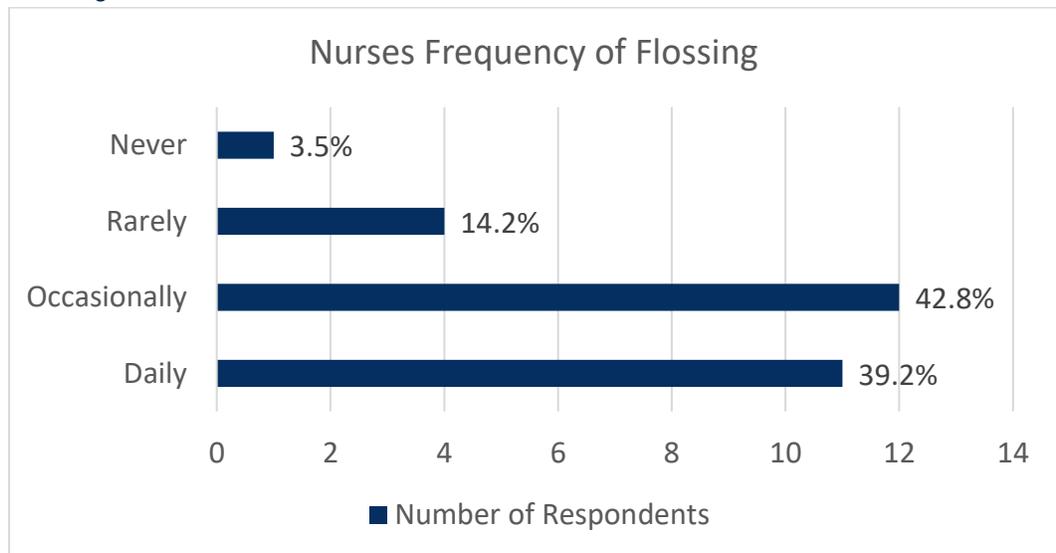
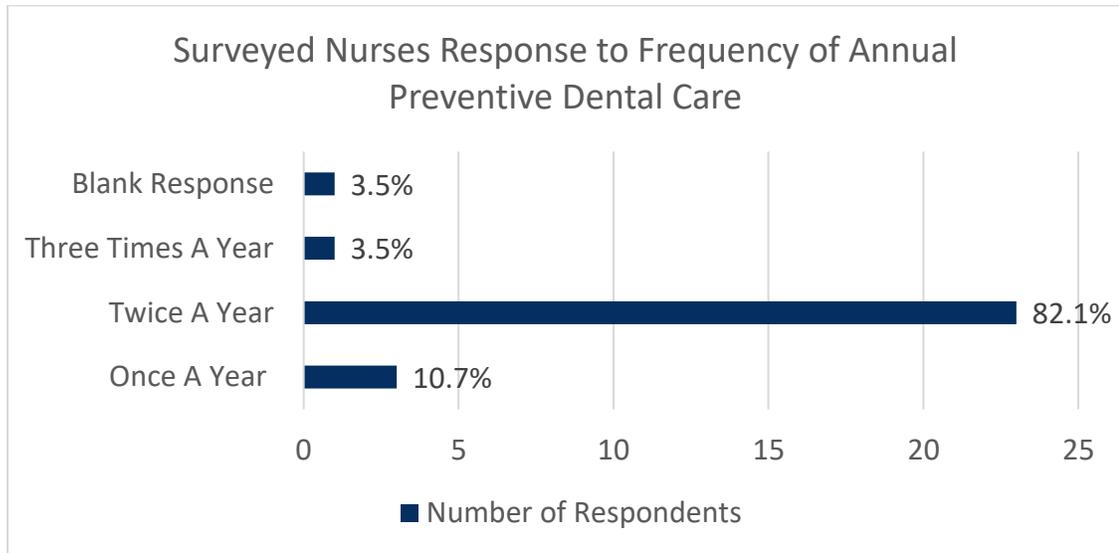


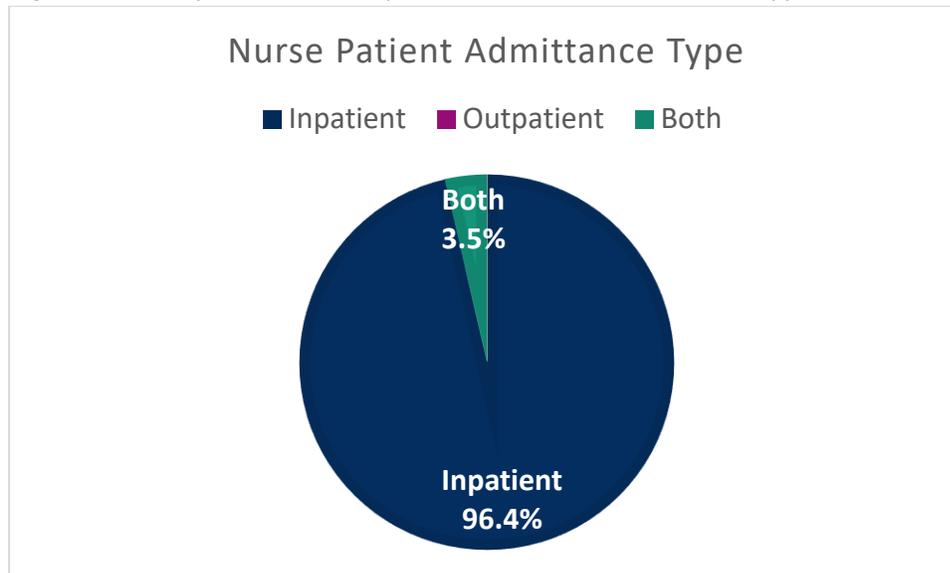
Figure 4. Surveyed Nurses Response to Personal Oral Hygiene- Frequency of Annual Preventive Dental Care



*Patient Admittance and Length of Stay*

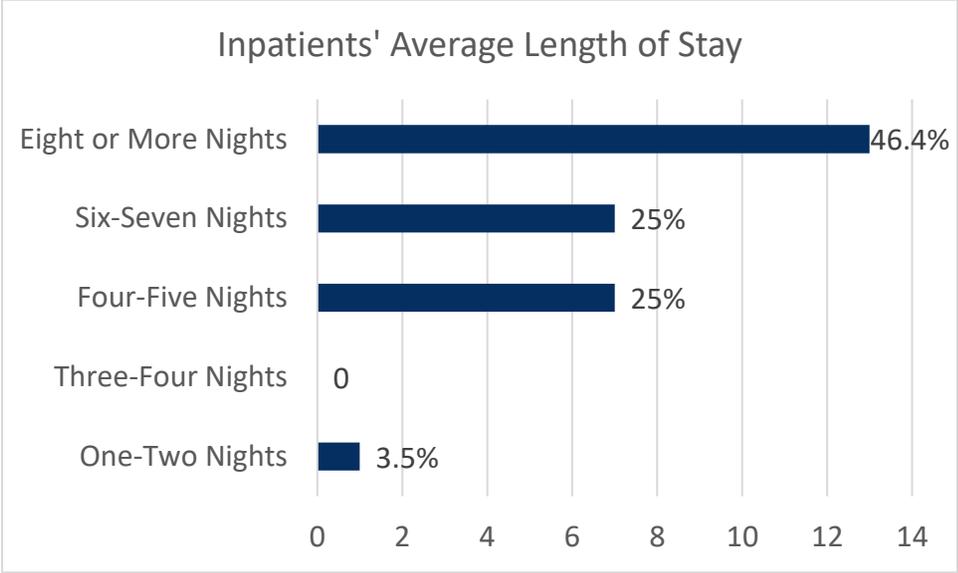
Survey respondents report caring for patients who have been admitted to inpatient care (27, 96%) and/or both (1, 3.5%) (Figure 5).

*Figure 5. Surveyed Nurses Response to Patient Admittance Type*



Thirteen out of 28 respondents report the average length of patient stay is eight or more nights (13, 46.4%), six to seven nights (7, 25%), four to five nights (7, 25%), one to two nights (1, 3.5%) (Figure 6).

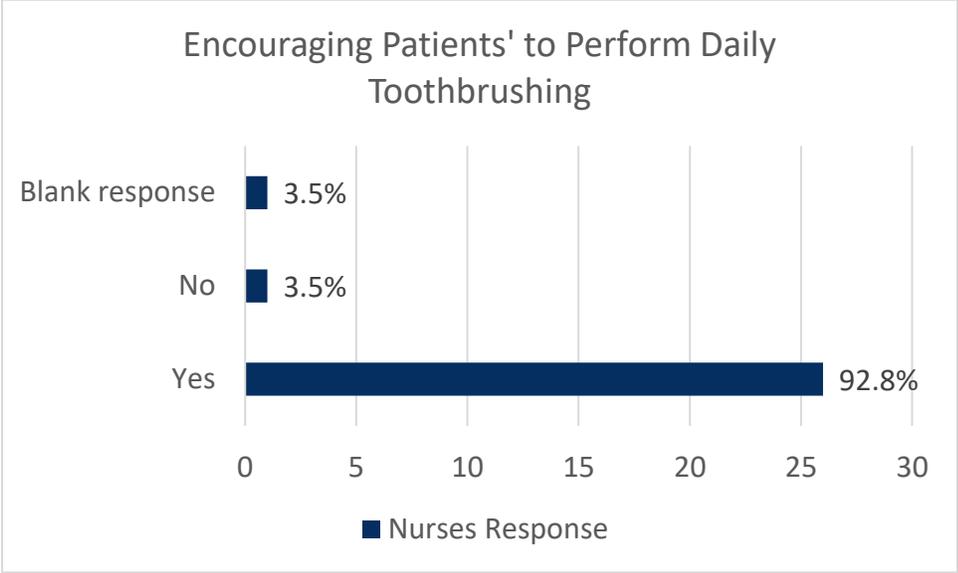
Figure 6. Surveyed Nurses Response to an Inpatients' Average Length of Stay at UNMH



*Nurses and Oral Care*

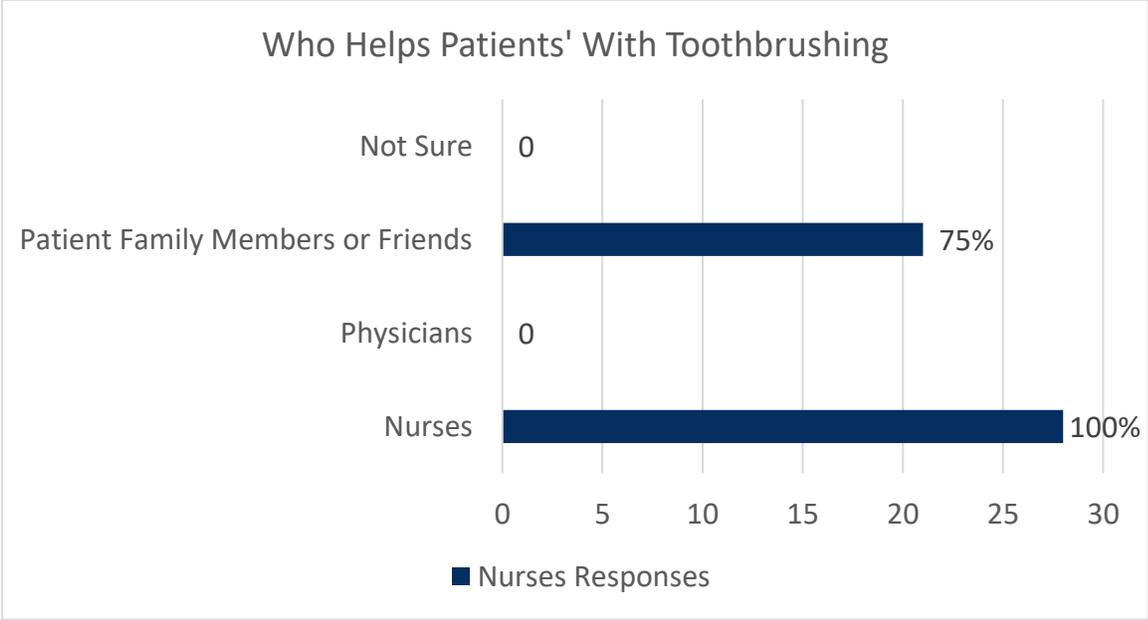
Ninety-two percent or 26 of the 28 surveyed nurses encourage their patients, who are able to perform their own toothbrushing, to do so while inpatient at UNMH (Figure 7).

Figure 7. Surveyed Nurses Who Are Encouraging Patients' to Perform Daily Toothbrushing



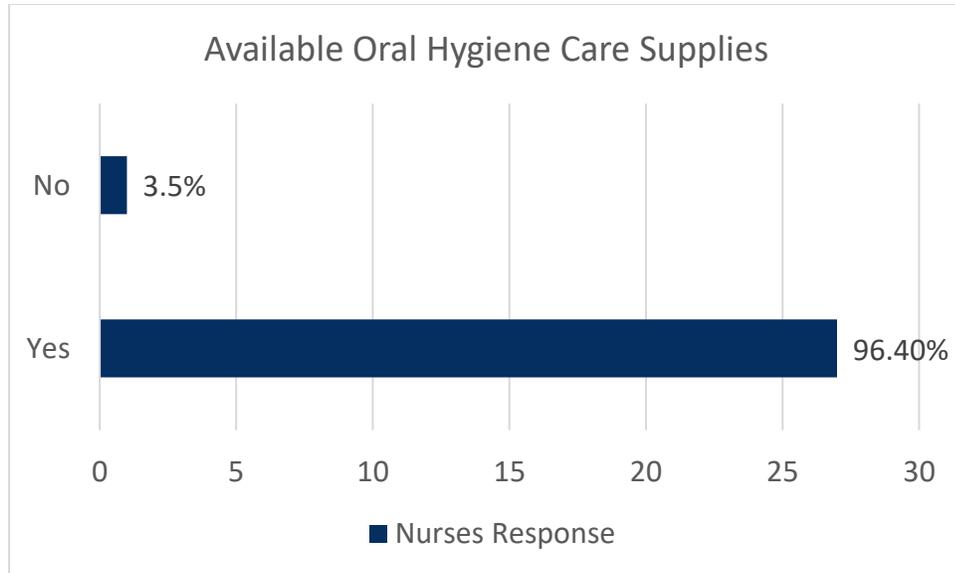
All 28 surveyed nurses' report helping patients with toothbrushing and 21 also mention family and friends also assist patients with toothbrushing (Figure 8).

Figure 8. Surveyed Nurses Response to Who Helps Patients' with Toothbrushing



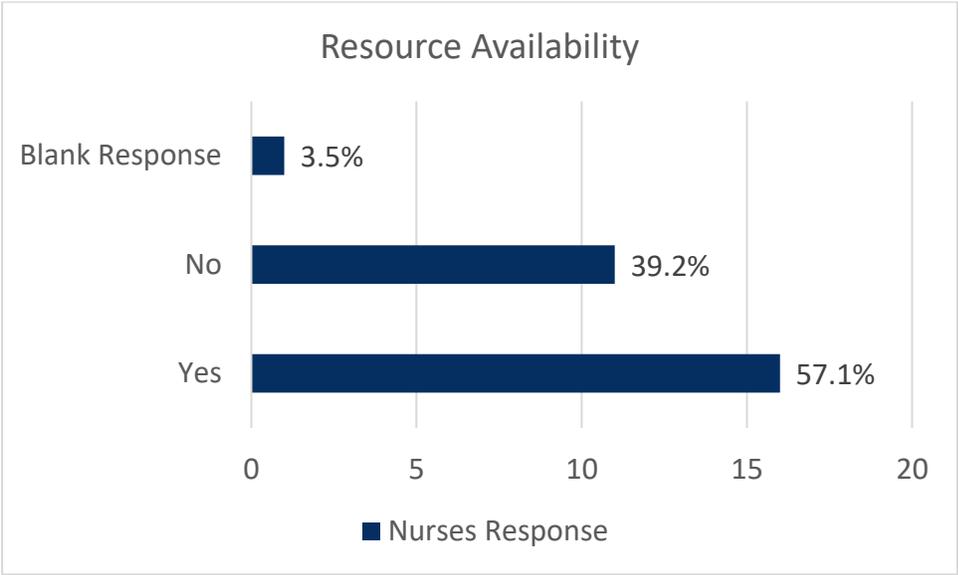
Twenty-seven of the surveyed nurses report having access to the right supplies (suction, toothbrush, toothpaste) available to assist in performing oral hygiene care (Figure 9).

*Figure 9. Surveyed Nurses Report Having the Proper Supplies to Perform Oral Hygiene Care*



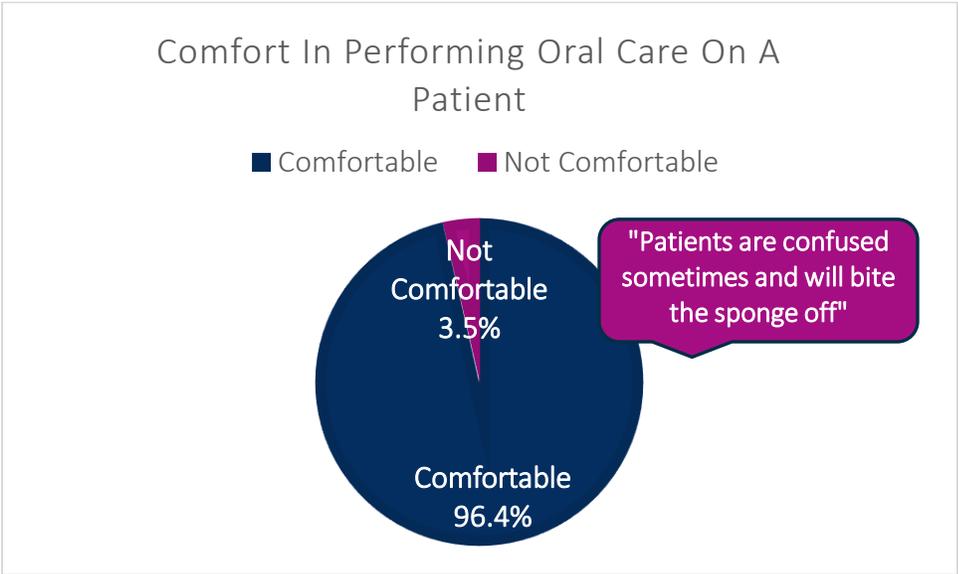
Sixteen, 57.1% of surveyed nurses report having the proper resources to assist if a question regarding a patient's oral health arises and 11, 39.2% of surveyed nurses report just the opposite (Figure 10).

Figure 10. Surveyed Nurses Report Available Resources to Assist in Answering Oral Health Questions



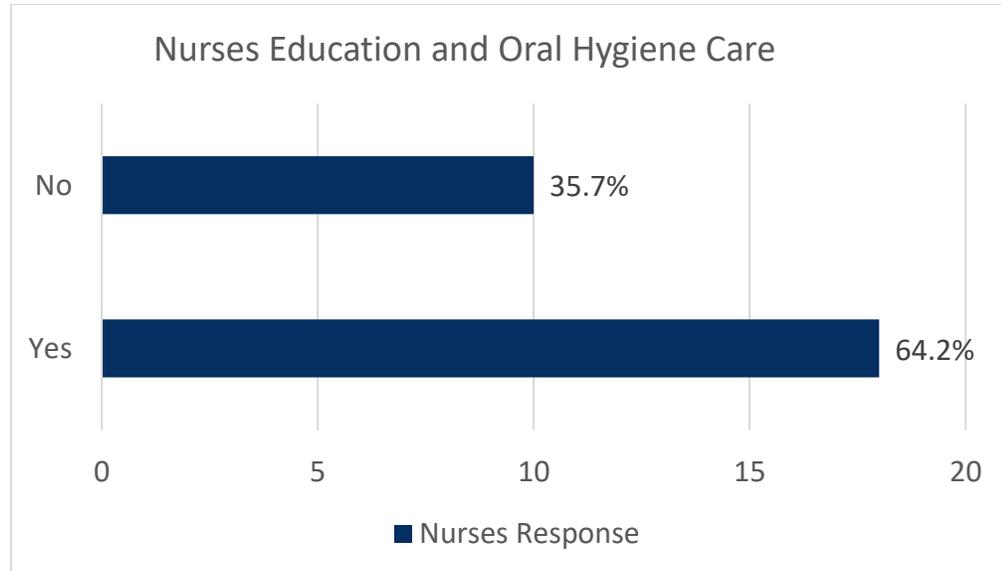
Twenty-seven, 96.4% of surveyed nurses feel comfortable performing toothbrushing on a patient (Figure 11). The respondent who reported not feeling comfortable gave this reason "Patients are confused sometimes and will bite the sponge off."

Figure 11. Surveyed Nurses Report Comfort in Performing Oral Care on a Patient



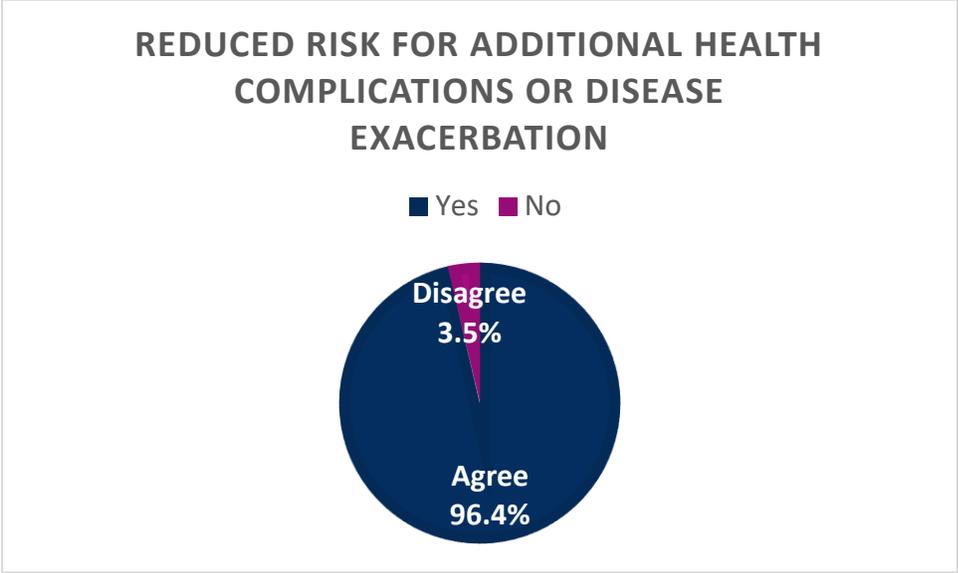
Eighteen, 64.2% of surveyed nurses feel that their nursing education prepared them in performing oral hygiene care on a patient, whereas the 10, 35.7% felt the opposite (Figure 12).

*Figure 12. Surveyed Nurses Report on Nursing Education Preparing Them in Performing Oral Hygiene Care on a Patient*



Twenty-seven, 96.4% of surveyed nurses feel that patients who have daily toothbrushing are at a reduced risk for additional health complications or disease exacerbation (Figure 13).

Figure 13. Surveyed Nurses Who Feel Patients Who Have Daily Toothbrushing Are at a Reduced Risk for Additional Health Complications or Disease Exacerbation



Twenty-six, 92.8% of surveyed nurses believe that the care staff and patient could benefit from inter-professional collaboration with a dental provider like a dental hygienist (Figure 14).

Figure 14. Surveyed Nurses Response to Inter-professional Collaboration with a Dental Hygienist

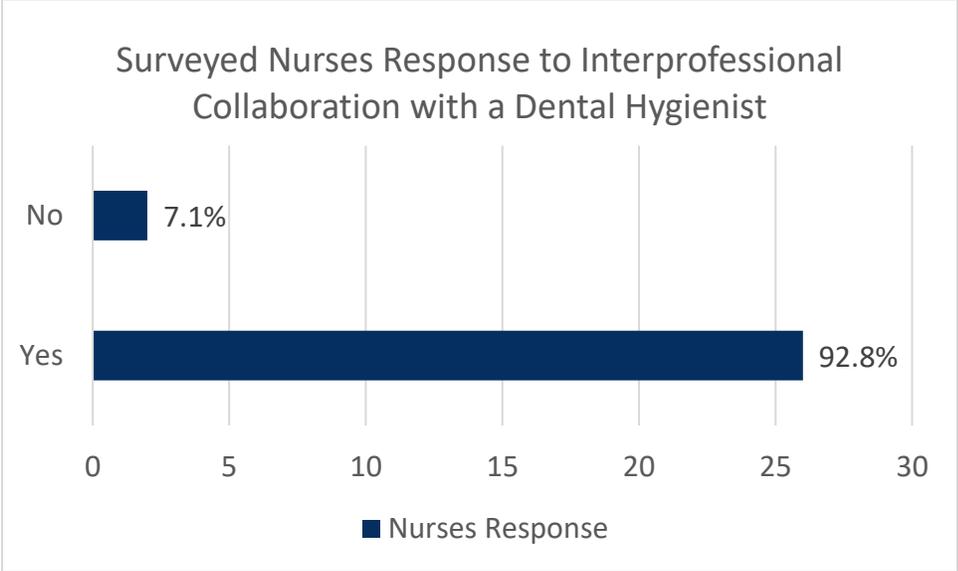


Figure 14 Surveyed Nurses Response to Inter-professional Collaboration with a Dental Hygienist

When asked to provide feedback 9, 32.1% of the respondents did so (Table 6).

Feedback included: continuing education for nurses with didactic learning, oral hygiene education for patients and possible professional dental cleanings.

*Table 6. Surveyed Nurses Feedback on Ways in Which Dental Hygienists Can Get Involved*

Feel free to provide feedback on how and in what ways we as dental hygienists can assist you as nurses provide oral hygiene care (CE's, work alongside you, etc.)
We use the prepackaged oral care kits for our ventilated patients. We also have tooth brushes and toothpaste on the unit, however, it varies on how much this is used, and the quality of the product itself. Families often bring in their own supplies, as ours seem cheap, and ineffective. Would be great to learn more as VAP, dental abscess, etc are a direct concern when dealing with critically ill patients with facial trauma.
Many of our patients have extremely poor oral hygiene on admission. Like broken windows on a building, poor oral hygiene is an invitation to other poor health practices. Discharge teaching consultation for ALL patients undoubtedly would improve over-all health.
It would be helpful to get feedback on oral care for patients with complicated presentation like oral trauma, wired jaw, or broken teeth.
work with nurses at bedside perhaps weekly, teach about the following: denture care & denture care supplies, gum care when there are no teeth, special care with broken teeth from trauma, mouth care with orthognic wiring, assessment of the oral cavity & dentition
Oral education seminars to nurses to explain the importance of oral hygiene while patients are in the hospital. Patients tend to overlook brushing their teeth while staying 3+ days in the hospital, and nurses should encourage/remind patients to complete their oral care. Hygienists could also coach technique to both nurses and patients.
The biggest problem I encounter when performing oral care is on patients who are NOT intubated, but have a decreased LOC and breathe with their mouth open. Many times, the excessive dryness forms thick plaques inside the mouth. Sometimes these can be so severe that they threaten the airway and bleed when removed.
Review with observation the manner in which the nurse provides hygiene, then provide feed back.
With the populations we see it could help tremendously in preventing further complications, especially in our vented pt
As UNMH provides care to a underserved community; even in the ICU we see patients with very poor dentition that is detrimental to their health. It would be amazing if dental hygienists could come provide cleaning to patients in the ICUs. There would have to be some sort of screening tool to see if patient's were stable enough or not to receive a teeth cleaning (eg if they have prolonged bleeding time, stable vital signs, etc.). Would also be great to come up

with better ways to provide oral care to patients with facial trauma whose mouths are wired shut; it is always difficult to clean their oral cavity.

## Discussion

Being that the study was not disseminated to all 2,300 UNMH nurses and was only sent to 240 nurses working in the following adult intensive care units: Medical Intensive Care (MIC), Trauma Surgical Intensive Care (TSIC) and Neuroscience Intensive Care (NIC), this study does not fulfill the intended purpose or provide the appropriate information. As a result, previous guesstimates are voided. This study is limited by the very small response rate of 28/240 (11.6%).

However, results of this study allow for cross tabulation of the previous contingency tables seen in chapter 3. Which were used as a means to identifying the association between nursing staff values on oral health and their views on patient receiving oral care.

Findings from this study reveal that the majority of the respondents brush twice daily (67.8%), floss occasionally (42.8%), and have preventive care two times a year (78.5%) and 96.4% of all respondents feel comfortable performing oral hygiene care on a patient. (Table 7)

*Table 7. Comfort with Performing Toothbrushing on Patients in Relation to Participant Characteristics*

		Do you feel comfortable performing oral care i.e. toothbrushing on a patient?	
		Yes	No
Column Totals for all three questions below.		N=27	N=1
How many times per day do you brush your teeth?	0	0	0
	1	8 (28.5)	1 (3.5)

	2	19(67.8)	0
	3+	0	0
How often do you floss your teeth?	Daily	11 (39.2)	0
	Occasionally	12 (42.8)	0
	Rarely	3 (10.7)	1 (3.5)
	Never	1 (3.5)	0
On average, how many times per year do you have preventive dental care i.e. a dental cleaning with dental hygienist?	0	0	0
	Once a Year	3 (10.7)	0
	Twice a Year	22 (78.5)	1 (3.5)
	Three or More Times a Year	1 (3.5)	0
	Blank Response	1 (3.5)	0

Previous research studies have found that nursing education curricula reveals very little emphasis on the importance and practice of oral care on patients (1). Which may be true for the 10/28 (35.7%) of respondents who felt their nursing education did not prepare them in performing oral hygiene care on a patient. Regardless of oral hygiene education, 27/28 (96.3%) respondents all agree that patients' who have daily toothbrushing are at a reduced risk of additional health complications and disease exacerbation. (Table 8) Results of this study reveal that these nurses/survey respondents do not view oral care as a means of social acceptance and for patient comfort, nor seem to rank it of low priority. (1, 18, 29) This may be due to the fact that the majority of these nurses' work in the Intensive Care Unit at UNMH and often have to worry about maintaining an airway especially for intubated patients and avoiding other complications like aspiration pneumonia.

*Table 8. Attitudes about Patient Health Risk in Relation to Education and Comfort with Performing Oral Health Care*

		Do you feel patients who have daily toothbrushing are at a reduced risk for additional health complications or disease exacerbation?	
		Yes	No
Do you feel like your nursing education prepared you in performing oral hygiene care on a patient?	Column Total	N=27	N=1
	Yes	18 (64.2)	0
	No	9 (32.1)	1 (3.5)
Do you feel comfortable performing oral care i.e. toothbrushing on a patient?	Column Total	N=26	N=2
	Yes	25 (89.2)	2 (7.1)
	No	1 (3.5)	0

Results of this study revealed the majority of surveyed nurses, 26/28 (92.8%) are interested in inter-professional collaboration with a dental provider like a dental hygienist. (Table 9) In fact, 9/28 (32.1%), took the time to provide feedback (Table 6). Many seem to be interested in having a didactic continuing education course with hands on learning. A few express having a dental provider educate patients on the importance of good oral health and one respondent even goes further into seeing a need for professional dental cleanings on hospitalized patients.

*Table 9. Association between Reported Benefits of Inter-professional Collaboration and Education*

Do you feel that you, the care staff and patient could benefit from inter-professional collaboration with a dental provider like a dental hygienist?

		Yes	No
Do you feel like your nursing education prepared you in performing oral hygiene care on a patient?	Column total	N=26	N=2
	Yes	16 (57.1)	2 (7.1)
	No	10 (35.7)	0

### Conclusion

Findings from this study suggest that UNMH ICU nurses' value oral health in themselves and in their patients. They seem receptive to having inter-professional collaboration with dental providers like a dental hygienist to assist in hands on learning. Results of this study are just the tip of the iceberg in answering how and in what ways dental hygienists can be integrated in hospital-like settings. More research and extensive research need to be conducted to see if all hospital units have as much success in performing oral care on patients and if there is interest for inter-professional collaboration in other units as well. Although this study was not carried out as proposed the information and knowledge gained seems fruitful.

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