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Assessing interpersonal communication in Dental Hygiene students providing geriatric care

Lasandra Wilson

Assessing Interpersonal Communication in Dental Hygiene Students Providing Geriatric Care:

A Thesis

Presented in Partial Fulfillment of the Requirements for the

Degree of Masters of Science

in

Dental Hygiene

in the

College of Graduate Studies

Eastern Washington University

by

Lasandra Wilson

Spring 2021

Major Professor:

Ann O'Kelley Wetmore, RDH, MSDH

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MASTER'S THESIS

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Date 5.3.21

Human Subjects Approvals

UNIVERSITY OF SOUTH DAKOTA

Date: January 29, 2021

The University of South Dakota
414 E. Clark Street
Vermillion, SD 57069

PI: Lasandra Wilson
Re: Initial - IRB-20-199, *DH Self Assessment and Geriatric Population*

The University of South Dakota Institutional Review Board has rendered the decision below for this project.

Decision: Not Human Subjects Research; IRB Review Not Required

Dear Lasandra Wilson,

The information submitted for the project referenced above has been reviewed via procedures of the University of South Dakota Institutional Review Board (IRB). Upon review, the IRB determined these activities do not meet the regulatory definition of research, and do not fall under the IRB's purview for the following reason:

The activities described for this project will be conducted for quality improvement purposes only, and not for the purpose of research. Data will be collected and analyzed to evaluate the effectiveness of an educational module. The results will be specific to the module and to the program utilizing it. At this time, there is no intention to develop or contribute to generalizable knowledge.

If, in the future, you decide to collect information with the intent to develop or contribute to generalizable knowledge (i.e. draw broad conclusions or apply your results to those outside your study population and then disseminate your findings externally), or you wish to analyze identifiable, private data, you will be required to submit an application to the USD IRB for review.

Please maintain a copy of this letter in your study file for documentation that this project does not meet the regulatory definition of human subject research and does not require IRB approval. If you have any questions regarding our submission or review process, please do not hesitate to contact me at 605-658-3767 or Ann.Waterbury@usd.edu.

Sincerely,

The University of South Dakota Institutional Review Board

Ann Waterbury

Ann Waterbury. M.B.A
Director, Office of Human Subjects
University of South Dakota
(605) 658-3767

EWU Office of Institutional Research Quality Improvement/Quality Assurance (QI/QA)

QI/QA decision tree : Entry # 84

EWU ID

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Name of project lead (first and last name)

Lasandra Wilson

Name of the department through which the project will be conducted

Dental Hygiene

Title of the project

Dental Hygiene Self Assessment and Geriatric Population

Brief description of the project and goals

The purpose of this study is to provide an educational module to assist in the development of communication skills between dental hygiene students and the geriatric population. The education module will assess students' perceived abilities and confidence in communicating with the geriatric population. Upon completion of the educational module, this proposed study will use a standardized rubric to determine if there is a difference between how patients assess students, how faculty assess students, and how students assess themselves.

Are you a student conducting research to satisfy a degree requirement?

No

Is the project intended to produce generalizable knowledge?

No

QI/QA decision tree : Entry # 84

Is the project intended to directly affect institutional or programmatic practice?

Yes

Is the project intended to improve a process or delivery of a university service?

Yes

Does the project involve testing an experimental drug, device (including medical software or assays), or biologic?

No

Is the project receiving funding (public or private) that will consider it to be a human subjects research study?

No

Does the project involve randomization?

No

Is there sufficient evidence to support this project, or is the project being mandated by university policy?

Yes

Is the project considered to be part of usual customer/student care?

Yes

Notes

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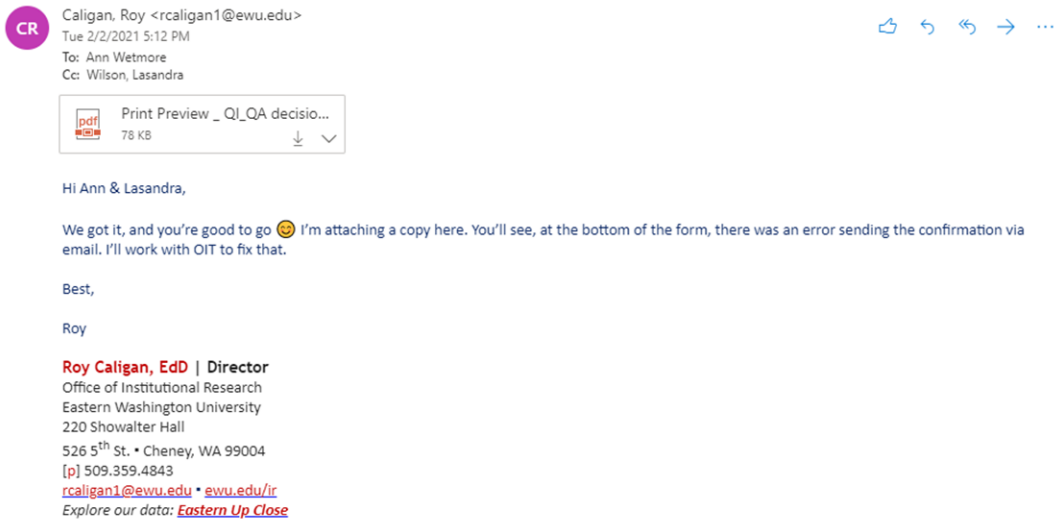

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Caligan, Roy <rcaligan1@ewu.edu>
Tue 2/2/2021 5:12 PM
To: Ann Wetmore
Cc: Wilson, Lasandra

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78 KB

Hi Ann & Lasandra,

We got it, and you're good to go 😉 I'm attaching a copy here. You'll see, at the bottom of the form, there was an error sending the confirmation via email. I'll work with OIT to fix that.

Best,

Roy

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Abstract

Purpose: This study examined the implementation of an educational module regarding development of communication skills between dental hygiene students and the geriatric population. The educational module assessed students' perceived abilities and confidence in communicating with the geriatric population. Subsequently, a standardized rubric determined if there is a difference between how faculty assess students, patients assess students, and students assess themselves.

Methods: Dental hygiene students from the University of South Dakota participated in the educational module and completed pre and post tests. Voice recordings from student-patient interactions in the clinic setting were evaluated by faculty, patients, and students using a rubric derived from the Gap-Kalamazoo. Data was compared for quantitative changes.

Results: A total of fifty-six dental hygiene students (N=56) were included in the research study; thirty-one first-year students (n=31) and twenty-five second-year students (n=25). Analysis of pre-test to first post-test revealed statistically significant changes in student's knowledge ($p < .001$) and confidence ($p = .024$) in communicating with the geriatric population, however there was no statistically significant changes in student knowledge or confidence from first to second post-tests. There was statistical difference between faculty, patient, and student self-assessment scores ($p < .001$).

Conclusion: An educational module on communication with the geriatric population is an effective method to increase knowledge and confidence for dental hygiene students. Additionally, including faculty and patient feedback on a routine basis is effective in

assessing student communication skills. Incorporating as educational module with student faculty and patient assessment should be incorporated into the dental hygiene curriculum.

Acknowledgements

The success of this research was made possible by the University of South Dakota dental hygiene students. I am eternally grateful for their eager participation in this study as their experiences and knowledge were at the heart of the research. I want to extend thanks to my committee members for offering words of encouragement and helping me think outside the box during this process, your guidance and advice were instrumental to this achievement. An immense thank you to Ann O'Kelley Wetmore for her unwavering support, reassurance, and extreme knowledge. Covid presented us with countless challenges but together we were able to overcome them.

I am overwhelmed by the kindness of Aaron W. Calhoun who gave permission to incorporate the Gap-Kalamazoo Communication Skills Assessment Form (GKCSAF) for data collection and for supplying me with the GKCSAF Analysis Spreadsheet to aid in proper data analysis. Statistical analysis was made possible by Robert Doss who took the time to walk me through the process of completing my own statistical analysis, while helping me understand and present the findings appropriately; I now have a newfound appreciation for research thanks to this guidance.

Finally, I am overwhelmed by the love, patience, and support from my amazing husband, Garrett. Thank you for encouraging me to reach for my goals and for continuing to believe in me amidst the many challenges of this project.

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Introduction/Literature Review

Introduction to the Research Question

Interpersonal communication is essential to patient interaction in the healthcare setting. This is especially true of dental hygienists who must convey important patient education messages within a structured time with patients. During this limited time, it is necessary for information exchange to be efficient and effective. Dental hygienists must understand the needs of their patients and be willing and able to address them in a timely manner. It is important for dental hygienists to learn how to convey messages in terms that are easily understood by the patient while being sensitive to differences such as culture and age. If dental hygienists can learn and master interpersonal communication skills as students, they may be more successful as practicing clinicians. Walker et al. (2016) suggest students may feel more confident in treating patients who are unlike them if they have consistent experience with such interactions. The geriatric population presents a unique opportunity for dental hygiene students to learn about a multitude of factors affecting communication. These experiences coupled with assessment are how students learn the necessary tools to be effective communicators. In evaluating interpersonal communication skills, self-assessment improves performance in students who utilize its practice (Blue, 2006). Self-assessment allows students to learn about their strengths and weaknesses, helping them to become better clinicians. The literature suggests when subjects are given the opportunity to evaluate their own performance, the way they evaluate their performance often differs from how others evaluate them

(Calhoun et al., 2010). This provides the foundation for this study that includes assessment from faculty, peers, and patients, in addition to self-assessment.

Statement of Problem

Effective communication between healthcare providers and patients is a key factor in the overall success of treatment. This is especially true when dealing with geriatric patients as this population requires healthcare providers to be aware of additional factors contributing to their overall health. Based on the National Dental Hygiene Research Agenda (NDHRA) developed by the American Dental Hygienists' Association (ADHA), an area where investigation is encouraged is "development and testing of conceptual models distinct to dental hygiene that will guide education, practice and research" (2016, p. 11). This study is designed for the area of professional development and focuses specifically on education. As part of the discovery phase of research, learners' communication skills were assessed by themselves, peers, faculty, and their patients using a standardized communication rubric. Discovering what type of assessment is most helpful to a students' learning may aid dental hygiene programs in their development of effective curricula and assessment methods ultimately resulting in outcome measurements.

Research Questions

This study aimed to answer the following questions:

- Does an educational module on interpersonal communication skills for the geriatric population affect students' perceived abilities or knowledge in communicating with the geriatric patient?

- Does an educational module on interpersonal communication skills for the geriatric population affect students' confidence in communicating with the geriatric patient?
- Upon completion of an educational module on interpersonal communication skills for the geriatric population, given a standardized communication rubric, is there a difference between how patients assess students, how faculty assess students, and how students assess themselves?

Overview of Research

Interpersonal communication has been defined by Brooks and Heath as: "the process by which information, meanings and feelings are shared by persons through the exchange of verbal and nonverbal messages" (Brooks & Heath, 1989, as cited in Hargie & Dickson, 2004, p. 12). Communication between dental hygienists and their patients is a key factor in reaching successful treatment outcomes. This communication is not solely verbal, but includes body language, attitudes, emotions, and perceptions. It is important for dental hygienists to include all facets of communication when addressing their patients, especially those who belong to the geriatric population.

The geriatric population can be defined as individuals who are 65 years of age and older according to the Organisation for Economic Co-operation and Development (OECD) (2018). This time period can be divided into the following subgroups: young-old, old-old, oldest-old, centenarians, and supercentenarians (Wilkins et al., 2017). However, it is important to note that chronological age, how many years have passed since a person's birth, is not the same as biological age. Biological age takes into

consideration genetics and lifestyle choices and serves as a measure of how well a person's body is functioning. The geriatric population can therefore be classified by *functional age*; this is determined by how well an individual can perform daily tasks (Wilkins et al., 2017). Individuals born after World War II between the years 1946 and 1965 are often referred to as baby boomers. This specific age group makes up a large percentage of the current population and is often in need of specialized dental care. The World Health Organization (WHO) recognizes the concept of 'active ageing' and identifies that as risk factors for oral disease are minimized, individuals are able to enjoy a higher quality of living (Petersen & Yamamoto, 2005). Wilkins et al., report that in more recent years, this population has seemed motivated to utilize preventative service to help maintain and improve their oral health, this ultimately results in more individuals retaining their natural dentition (2017).

Accreditation standards for dental hygiene graduates regarding communication and providing care for the geriatric patient are set forth by the American Dental Association (ADA) Commission on Dental Accreditation (CODA) in Standard 2-12. An educational module focusing on the geriatric patient may provide students with the skills needed to effectively communicate with the geriatric patient when providing dental hygiene therapy. The American Dental Education Association (ADEA) has defined competence as: "acquiring and maintaining the high level of special knowledge, technical ability and professional behavior necessary for the provision of clinical care to patients and for effective functioning in the dental education environment" (2009, p. 2). The education module implementing the communication skills meets the CODA standards and ADEA competencies, thus providing value to dental hygiene curriculum.

Self-assessment has been utilized by dental and dental hygiene programs as an effective method of evaluating both clinical skill development and communication skills (Kramer et al., 2009; Navickis et al., 2010). Peer to peer learning and assessment, in addition to receiving feedback from instructors provides students with the experience necessary to identify their strengths and weaknesses. Students may not feel comfortable asking a patient for feedback; however, patient feedback is valuable as it presents a real-life aspect to learning. It has been noted in the literature that there are differences between self, patient, and peer assessments.

Interpersonal communication has been studied using the Kalamazoo Essential Elements Communication Checklist (KEECC) (see Figure 1). This checklist encompasses seven factors that measure communication skills between medical providers and patients: Build a Relationship, Open the Discussion, Gather Information, Understand the Patient's Perspective, Share Information, Reach Agreement, Provide Closure (Duffy et al., 2004; Joyce et al., 2010; Makoul, 2001; Peterson et al., 2014; Schirmer et al., 2005). It has been suggested by Duffy et al., that "there are three basic methods for assessing communication and interpersonal skills: (1) checklists of observable behaviors in interactions; (2) surveys of patients' experience in interactions; and (3) examinations using oral, essay, or multiple-choice response questions" (2004, p. 498). Programs have successfully incorporated the use of multisource assessments such as student self-assessment, peer assessment, patient surveys, and standardized patients to evaluate competence in the development of interpersonal skills, as well as the ability to present treatment plans, and provide patient care (Kramer et al., 2009). However, according to Dong (2015), "competence in communication skills is not only about the presence of

specific behaviors but also about the timing of effective verbal and nonverbal behaviors in the context of interactions with patients" (p. 24). The Kalamazoo Communication Checklist was used in a study by Anyan (2012), as a guide to develop a role-playing/instructor scoring rubric to evaluate communication skills of dental students (*N*=45) based on video-recordings of their interactions; the use of self, peer, and faculty assessment was incorporated. This particular study included both pre and post-test assessments in addition to voice recording during role-playing exercises. It is worth noting that "over 25 communication and interpersonal skills rating checklists are described in the literature, but only a few have been widely used… for assessing communication behaviors, the checklist remains the most frequently used assessment tool." (Duffy et al., 2004, p. 500).

Figure 1

Kalamazoo Essential Elements Communication Checklist

Kalamazoo Essential Elements Communication Checklist

Build a Relationship
Greets and shows interest in patient as a person
Uses words that show care and concern throughout the interview
Uses tone, pace, eye contact, and posture that show care and concern

Open the Discussion
Allows patient to complete opening statement without interruption
Asks "Is there anything else?" to elicit full set of concerns
Explains and/or negotiates an agenda for the visit

Gather Information
Begins with patient's story using open-ended questions ("Tell me about…")
Clarifies details as necessary with more specific or "yes/no" questions
Summarized and gives patient opportunity to correct or add information
Transitions effectively to additional questions

Understand the Patient's Perspective
Asks about life events, circumstances, other people that might affect health
Elicits patient's beliefs, concerns, and expectations about illness and treatment
Responds explicitly to patient statements about ideas, feelings, and values

Share Information
Assesses patient's understanding of problem and desire for more information
Explains using words that are easy for patient to understand
Checks for mutual understanding of diagnostic and/or treatment plans
Asks whether patient has any questions

Reach Agreement (if new/changed plan)
Includes patient in choices and decisions to the extent s/he desires
Asks about patient's ability to follow diagnostic and/or treatment plans
Identifies additional resources as appropriate

Provide Closure
Asks whether the patient has questions, concerns, or other issues
Summarizes
Clarifies follow-up or contact arrangements
Acknowledges patient and closes interview

(Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education, 2001).

Communication Definitions and Theory

Communication is "a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior; personal rapport" (Merriam-Webster, n.d.). In developing relationships, the role of communication shifts from simply transferring information to sharing one's beliefs, values, and viewpoints in a way that demonstrates care and compassion. When communication becomes personal and occurs in a safe and relaxed environment, new types of relationships can emerge. Interpersonal communication is defined by Brooks and Heath as: "the process by which information, meanings and feelings are shared by persons through the exchange of verbal and nonverbal messages" (Brooks & Heath, 1989, as cited in Hargie & Dickson, 2004, p. 12).

Communication Theory for Communicating with the Elderly. The geriatric population is more likely to suffer from chronic diseases and therefore utilize health care services more frequently than other age groups (Frank, 2003). Since these individuals have special needs, it is important to educate future dental professionals on ways to interact with this age group. To communicate effectively, clinicians must understand the aging process interferes with physical and cognitive abilities (Frank, 2003, & Silva et al., 2015). However, it is not simply enough to know about challenges the geriatric population encounters; clinicians must put this knowledge into action in order to effectively serve their patients. Some basic principles of communication with geriatric patients include allowing extra time during appointments, speaking slowly and with the appropriate volume, sitting face to face, listening without interrupting, maintaining eye contact, and sticking to one topic at a time (Robinson et al., 2006; Stein et al., 2014,). It

has been found in the research that elderly patients yearn to be understood by healthcare professionals (Frank, 2003; Silva et al., 2015). This can be accomplished through asking appropriate questions, repeating information when needed, and taking time to make sure patients understand all aspects of the conversation.

In a review of the literature surrounding communication theories, three main theoretical approaches emerged: individually-centered, interaction-centered, and relationship-centered (Bylund et al., 2012). Individually-centered theories focus on cognitive processes and how they influence the ways patients and providers understand and communicate with one another (Bylund et al., 2012). Interaction-centered theories focus on how individuals interact with one another; specifically, how the use of language is continuously affecting the ways patients and providers interact (Bylund et al., 2012). Relationship-centered theories focus on the type of information exchanged between individuals based on the type of relationship they have with one another (Bylund et al., 2012). Based on the descriptions of these theories, interaction-centered theories are the best fit for this research. As dental hygiene students are interacting with geriatric patients, it is important for them to realize how they phrase information as it may influence whether the patient decides to comply with their recommendations. One type of interaction-centered theory utilized by Watson and Gallois (1998), is the Communication Accommodation Theory (CAT). CAT is a theory that "seeks to explain and predict why, when, and how people adjust their communicative behavior during social interaction" (Giles, 2016, para. 1). As dental hygiene students treat patients, it is important for them to understand how they initially obtain information from their patient influences future conversations and interactions.

In addition to the prevalence of chronic disease, the geriatric population encounter barriers to communication preventing them from caring for themselves in the best way (Frank, 2003). This is one reason why finding a communication theory for the elderly is important. Through the research, Frank (2003) cited a correlation between communication and health care outcomes; when communication was effective, patients experienced an improvement in their health, and when communication was ineffective, there was a decrease in health. These findings indicate communication between patients and health care providers is imperative to improving overall health for the geriatric population. Educators should ensure the curriculum focuses on communication theory and strategies for all populations, including geriatric.

Importance of Effective Provider/Patient Communication

Communication skills in dentistry have been defined "as the ability to communicate effectively with patients, use active listening skills, gather and impart information effectively, handle patients' emotions sensitively, and demonstrate empathy, rapport, ethical awareness, and professionalism" (Nor et al., 2011, p. 1611). However, communication is unsuccessful if the sender's message is received differently than intended. Therefore, it is necessary for healthcare providers to speak in layman's terms, so information is more easily understood by patients. Wener et al., (2011), reinforce findings from Logan (1997), stating "patients want to be involved and educated about treatment options and for oral health professionals to listen, pay attention to their concerns, and treat them as individuals" (p. 1528). As providers form relationships with their patients, it may be easier for them to know what type of information the patient needs, resulting in more effective communication. This is confirmed through research

conducted by Silva et al., (2015), who found that listening to people and understanding their current situation likely results in identifying their needs. It is through active listening that providers can identify what their patients need and how to treat them most effectively. In addition, when people feel safe and understood, they are more likely to share information about themselves. This is not only important for treatment, but aids in developing strong and long-lasting relationships. Silva et al., (2015), goes on to say the quality of a relationship influences the ways people think and act. Therefore, learning how to communicate with the geriatric population is important to the dental hygienist and is beneficial in the dental hygiene curriculum. "According to Coulter (2011) professional training that promotes patient interaction is critical in meeting the changing needs and expectations of patients to feel understood, respected and supported in their self-care efforts" (Hanson, 2013, p. 142). Through the research on communication between healthcare providers and patients, there is a consistent theme on what is important; listening, respect, empathy, providing comfort, using appropriate language to explain findings, and making sure patients understand treatment (Frank, 2003; Wener, et al., 2011; Hanson 2013; Silva et al., 2015).

Curriculum. The ADEA Compendium of Curriculum Guidelines for Allied Dental Education Programs outlines specific requirements for the core content of a dental hygiene program. Although location of the program and available resources may play a factor in some areas, core content "should include didactic, clinical and/or elective field experiences" (ADEA Compendium, 2015-2016, p. 152). In focusing on the geriatric population, according to the ADEA Compendium:

- "a patient's status is considered special needs if it requires an alteration in the delivery of dental care." (p. 150)
- "Dental hygiene care of the individual with special needs requires specialized knowledge to include understanding of the developmental or acquired condition, limitations to care, communication skills and ability to work collaboratively." (p. 150)

Essential content in a dental hygiene program should include "modifications during the dental hygiene process of care" specific to the geriatric patient (ADEA Compendium, 2015-2016, p. 153). Therefore, when teaching communication, it is important to focus on:

- "Communication concerns, including sensory impairments, language levels and social style." (p. 151)
- "In addition to being introduced to the problems, students should be provided with resources or experiences to eliminate, reduce or manage the problems. Clinical experiences should be varied and challenging and should develop student confidence in delivering dental care to the special individual." (p. 151)

The ADEA Compendium offers primary educational goals specific to communication and self-assessment:

- "Communicate effectively with individuals with special needs or their caretakers in a positive, appropriate manner." (p. 151)
- "Assess one's professional attitudes, values and commitment to providing dental care to special individuals." (p. 152)

Finally, the ADEA Compendium suggests that dental hygiene students meet the following behavioral objectives:

- "Identify potential communication problems and identify resources for overcoming them." (p. 155)
- "Demonstrate verbal and nonverbal communication skills with individuals with special needs." (p. 155)

In 2011, ADEA approved a set of competencies for dental hygiene students to meet. These include: "C.6 Continuously perform self-assessment for lifelong learning and professional growth" and "C.9 Communicate effectively with diverse individuals and groups, serving all persons without discrimination by acknowledging and appreciating diversity" (p. 858).

Additionally, accreditation standards regarding communication are set forth by CODA. These standards must be met by each accredited dental hygiene program. In relation to communication, Standard 2-8a states, "general education content must include oral and written communications, psychology, and sociology" (2018, p. 21). Furthermore, CODA provides an intent for this standard whereby, "these subjects provide prerequisite background for components of the curriculum, which prepare the students to communicate effectively, assume responsibility for individual oral health counseling, and participate in community health programs" (2018, p. 21). In the CODA standards regarding Patient Care Competencies, Standard 2-12 states, "graduates must be competent in providing dental hygiene care for the child, adolescent, adult and geriatric patient" (2018, p. 23). The intent of this standard is that "clinical instruction and experiences with special needs patients should include instruction in proper

communication techniques and assessing the treatment needs compatible with these patients" (CODA, 2018, p. 23). For accreditation purposes, programs must provide evidence of compliance to the standards, for this standard, "student clinical evaluation mechanism demonstrating student competence in clinical skills, communication and practice management" are suggested methods of meeting this standard.

At the chosen site for this study, students must take *Fundamentals of Speech*, in addition to completing 12 credits of professional interest electives. These additional courses can be taken from numerous disciplines, both *Communication Disorders* and *Speech Communication* are recommended. Once students matriculate into the dental hygiene program, communication is taught and/or practiced throughout the two-year program in the following courses as shown in Figure 2 below. These courses meet CODA standards by teaching students how to effectively communicate with all patients, especially those with special needs.

Figure 2

Communication Content within the USD's Dental Hygiene Curriculum

Assessment of Program Competency *Information Management and Critical Thinking* by Course

Objective	Evaluation Method	Course																					
		310	**313**	**314**	**314**	**321**	**327**	**330**	**331**	**333**	**336**	**350**	**351**	**396**	**411**	**415**	**422**	**431**	**433**	**435**	**436**	**437**
	Group Activity			X				X	X		X		X	X	X	X		X			X	X
Effectively	Written Exam		X	X				X	X		X			X	X							
communicate	Journal										X			X	X						X	
in verbal and	Lab/Clinic Evaluation					X		X		X	X	X	X				X	X			X	
written form	Written Paper	X		X			X			X				X	X	X	X		X		X	
	Case Study Project		X		X													X		X		X
	Oral Presentation	X	X		X		X	X								X	X			X		X

Additionally, CODA identifies the following Standard 2-13 focusing on patient care competencies that provides another rationale for this study. Standard 2-13. states:

> Graduates must be competent in providing the dental hygiene process of care which includes: a) comprehensive collection of patient data to identify the

physical and oral health status; b) analysis of assessment findings and use of critical thinking in order to address the patient's dental hygiene treatment needs; c) establishment of a dental hygiene care plan that reflects the realistic goals and treatment strategies to facilitate optimal oral health; d) provision of patient-centered treatment and evidence-based care in a manner minimizing risk and optimizing oral health; e) measurement of the extent to which goals identified in the dental hygiene care plan are achieved; and f) complete and accurate recording of all documentation relevant to patient care.

The Intent of Standard 2-13 is: The dental hygienist functions as a member of the dental team and plays a significant role in the delivery of comprehensive patient health care. The dental hygiene process of care is an integral component of total patient care and preventive strategies. The dental hygiene process of care is recognized as part of the overall treatment plan developed by the dentist for complete dental care.

Examples of evidence to demonstrate compliance may include:

• Program clinical and radiographic experiences

• Patient tracking data for enrolled and past students

• Policies regarding selection of patients and assignment of procedures

• Monitoring or tracking system protocols

• Clinical evaluation system policy and procedures demonstrating student competencies

• Assessment instruments

• Evidence-based treatment strategies

- Appropriate documentation
- Use of risk assessment systems and/or forms to develop a dental hygiene care plan. (CODA, 2018, p. 24-25)

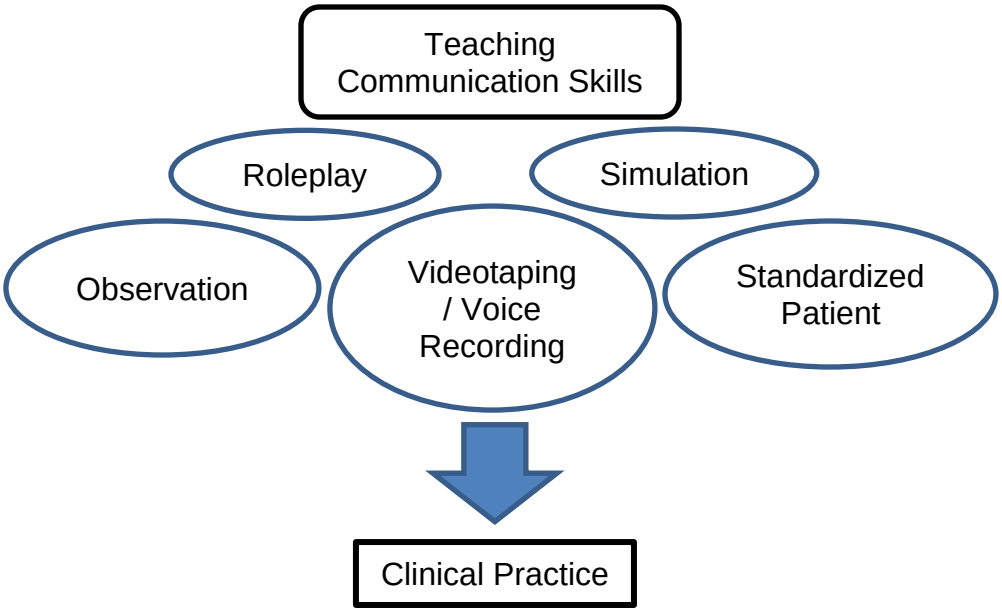
Methods of Teaching Communication Skills

Communication skills can be taught in a variety of ways including roleplay, simulation, standardized patient, videotaping, and observation. Ultimately, putting communication skills into action during clinical practice is the best way to not only teach communication skills, but also assess the amount of learning that has taken place. A study by Nor et al., demonstrated this progression of knowledge by selecting students who were in their final year of the program; the students were more clinically experienced than junior students and had previously completed a communication skills course at their school (2011). According to ADEA (2015-2016), "communication skills should be an integral component of the curriculum so that the student will be able to discuss findings with dental and other health care professionals as well as with the patient" (p. 99). Knowing how to speak in lay terms with people who are not familiar with medical terminology is important for the effective transfer of information; this may include the patient and/or their caregiver. When teaching communication strategies, it is also necessary to incorporate scenarios where complications arise to help students become familiar with identifying ways to overcome obstacles. According to a study by Nor et al., (2011), dental students expressed both positive and negative feelings when evaluated on their attitudes towards learning communication skills. This study included a self-administered questionnaire given to students in their final year of the program who had previously completed a communication skills course (Nor et al., 2011). If simulation is

paired with reflective activities and debriefing by faculty, both critical thinking and self-assessment flourish (ADEA, 2015-2016). Figure 3 demonstrates how varying methods of teaching communication skills can be utilized together to reach the goal of competent clinical practice.

Figure 3

Putting Communication Skills into Action



Challenges of Teaching Communication Skills

Although highly important to the success of a dental encounter, teaching communication skills often comes with many challenges. Through their research, Wener et al., (2011) found that making sure faculty are incorporating communication skills into clinical experiences, not letting other technical skills take precedence over communication, and ensuring students are achieving an appropriate level of competence

when applying communication skills were some of the challenges. It is possible that faculty members may have never received formal communication skills training themselves, making it difficult for them to model correct behaviors and attitudes (Ayn et al., 2017). Integrating communication skills with clinical skills is necessary to produce clinicians who are confident and competent in providing patient care. However, there is often not enough time available for faculty to focus on both skills equally with the student. One of the most commonly used methods of teaching and assessing communication skills is observation. Although direct observation allows for immediate feedback, Shah notes that this type of interaction "may be too infrequent" (2010, p. 23). In addition, the way feedback is delivered is important; students may be become defensive if feedback is given in an inconsiderate manner (Hannah et al., 2014). High fidelity human patient simulation and standardized patients are additional ways for students to gain experience similar to clinical practice; the main disadvantage to these types of learning are availability of mannequins or patients that can be quite costly. Roleplay can provide an experience that resembles clinical practice, but it takes time and is dependent on the availability of participants. Audio- or videotaping is often used to encourage self-assessment. According to the Kalamazoo report, "recording either real or simulated physician-patient encounters on audio or videotape provides a convenient tool for subsequent rating or coaching" (Duffy et al., 2004, p. 502). However, proper equipment may be unavailable for recording and watching or listening to the conversation is time consuming. Clinical practice considers everything that the student has learned and combines it into one experience. This can be a daunting task if the student does not feel prepared but is one way for individuals to examine specific skills that need attention.

Table 1 displays both pros and cons to the different methods of teaching communication skills.

Table 1

Different Methods of Teaching Communication Skills: Pros and Cons

(Duffy et al., 2004; Shah, 2010; Wener et al., 2011)

Method	Pros	Cons
Roleplay	Provides experience similar to clinical practice	Time consuming
		Participant availability
Standardized Patient	Similar to clinical practice	Time consuming
		Availability of participants
Simulation	Similar to clinical practice	Equipment such as mannequins may not be available
		Expensive
Videotaping / Voice Recording	Encourages self-assessment	Equipment may not be available
		Time consuming
Observation	Identify and make corrections immediately	Faculty not always available
Clinical Practice	Putting what has been learned into action - "real life"	Student may not be "ready"

Assessment

Merriam-Webster defines *assessment* as "the action or an instance of making a judgment about something, the act of assessing something, appraisal" (n.d.). In dental hygiene programs, it is necessary for students to not only assess their performance, but also their "professional attitudes, values and commitment to providing dental care" (ADEA, 2015-2016, p. 152). Regular and consistent self-assessment helps individuals gain a greater sense of their abilities and determine areas that require additional attention.

Assessing Communication Skills. Rubrics are thought of as the gold standard in assessing clinical skills and determining competency. The implementation of rubrics in

dental hygiene programs has aided faculty in assessing student's strengths and weaknesses (O'Donnell et al., 2011). It is through assessment that students gain a greater understanding of what they need to focus their attention on. Wener et al. (2011), conducted a study on communication skills utilizing student self-assessment; it involved identifying key communication elements valued by all stakeholders, developing focus groups to determine which of these skills to concentration on, and then arranging the information into a new instrument to evaluate these specific skills. The two instruments that emerged from the study were the Patient Communication Assessment Instrument (PCAI) and the Students Communication Assessment Instrument (SCAI) (Wener et al., 2011). The PCAI and SCAI are instruments designed to globally assess student communication by evaluating how well the student performs in the following areas: telephone; initial greeting; relationship-building, trust, and respect; non-verbal communication; sharing information and decision making; attention to comfort; and team communication (Schönwetter et al., 2012; Wener et al., 2011). Although the main goal of the Wener et al., (2011) study was to gather information regarding communication dynamics between patients and students, when put into action, the 69 original questions proved to make completion of the PCAI and SCAI challenging for participants. Many indicated that a shorter questionnaire would have been preferred (Schönwetter et al., 2012).

The Kalamazoo Consensus Statement (KCS) Assessment Tools include three paper-based instruments that assess physician-patient communication skills:

- Kalamazoo Essential Elements Communication Checklist (see Appendix A)
- Kalamazoo Essential Elements Communication Checklist-Adapted (see Appendix B)

- Gap-Kalamazoo Communication Skills Assessment Form (Gap-Kalamazoo)

All instruments use Likert scales and rate learners on seven communication skill competencies: Build a Relationship, Open the Discussion, Gather Information, Understand the Patient's Perspective, Share Information, Reach Agreement, and Provide Closure. The Gap-Kalamazoo is designed for assessing communication skills at a granular level by encouraging self-insight and self-reflection; in addition to the seven communication skills, it evaluates two additional dimensions: Demonstrates Empathy and Communicates Accurate Information (Yoon & Michaelsen, 2015). Gap-Kalamazoo is described by Yoon and Michaelsen as follows:

> It incorporates 360-degree assessment, which combines self-assessment and multi-rater evaluation, and uses a quantitative gap analysis. Gaps are calculated by subtracting self-assessed scores from raters' mean scores on each communication dimension. Positive values indicate self under-appraisal and negative numbers reflect over-appraisal. Gap analysis reinforces strengths and targets weaknesses or poor insight. (2015) See Table 2

Table 2

Comparison of ADEA, Gap-Kalamazoo, and CODA

Communication Tasks or Skills from Gap-Kalamazoo	CODA Standards	ADEA Competencies	ADEA Competencies for Entry into the Allied Dental Professions
Builds a Relationship Opens the Discussion Understands the Patient's Perspective Demonstrates Empathy Communicates Accurate Information	2-12 Graduates must be competent in providing dental hygiene care for the child, adolescent, adult and geriatric patient	C.9 Communicate effectively with diverse individuals and groups, serving all persons without discrimination by acknowledging and appreciating diversity	
Gathers Information	2-8a General education content must include oral and written communications, psychology, and sociology		Patient Care Assessment
Shares Information	2-13 Graduates must be competent in providing the dental hygiene process of care		Patient Care Dental Hygiene Diagnosis
Provides Closure What did this clinician do the best at? Why did you choose those particular answers? What could this clinician improve on? What could they have done better?	2-21 Self-assessment	C.5 Continuously perform self-assessment for lifelong learning and professional growth	Patient Care Evaluation

Studies conclude the Gap-Kalamazoo is suited for self-assessment as well as peer, faculty, and patient; there are various versions to support each of these types of assessment (See Appendices C, D, and E). A rubric developed through modification of this checklist may determine if there is a correlation between self, faculty, and patient assessment of interpersonal communication. Table 2 shows the specific communication tasks or skills utilized in the Gap-Kalamazoo and how they fit within the competencies and standards implemented in dental and dental hygiene programs.

Self-assessment. The following CODA standard regarding critical thinking competency identifies the need for dental hygiene educators to promote self-assessment and implement teaching methodology to assess student skills in self-assessment.

2-21 Graduates must be competent in the application of self-assessment skills to prepare them for life-long learning.

Intent: Dental hygienists should possess self-assessment skills as a foundation for maintaining competency and quality assurance.

Examples of evidence to demonstrate compliance may include:

• Written course documentation of content in self-assessment skills

• Evaluation mechanisms designed to monitor knowledge and performance

• Outcomes assessment mechanisms. (CODA, 2018, p. 27).

The literature indicates that self-assessment may be implemented before, during, or after patient care as a way to evaluate one's skills (O'Kelley Wetmore et al., 2010; Jackson & Tipton Murff, 2011). After incorporating a specific module on self-assessment, it is important to note that the research is consistent in finding that dental hygiene students were more likely to comment on their strengths and weaknesses instead of the tasks they

completed (O'Kelley Wetmore et al., 2010; Jackson & Tipton Murff, 2011). In addition to self-assessment it is important for students to have feedback from patients. Patient feedback is an important part of quality assurance, a programmatic standard required by CODA (CODA, 2018). Assessing communication skills using a standardized rubric has the potential to support quality assurance.

Importance of Patient's Perspective

Patient-clinician relationships are often better measured by patient feedback than outside observation from another individual (Anyan, 2012; Wener et al., 2011). Patients can offer a great deal of information about their experiences with a clinician and this feedback should not be disregarded. In self-assessment, individuals tend to either underestimate or overestimate their abilities; having feedback from patients is one way to better understand strengths and weaknesses that the clinician may not realize. "It is of note that, in a 2010 systematic review of studies on communication skills in dental education using real patients, none sought feedback directly from the patients to assess student communication skills" (Wener et al., 2011, p. 1530). Wener et al., (2011) reported, "A major weakness in communication assessment reported in the literature is that they are typically based on criteria defined exclusively by management and professionals rather than grounded in the values, experiences, and perceptions of the patients" (p. 1537). This demonstrates how the literature is lacking in research that utilizes patient feedback to evaluate communication skills of a clinician. Based on these findings, the research utilized feedback from patients to evaluate if there is a correlation between how patients assess students and how students assess themselves.

Summary

Interpersonal communication is essential to patient interaction in the healthcare setting; especially for dental hygienists who spend short periods of time with patients. With limited time, it is necessary for information exchange to be efficient, effective, and empathetic. Learning to convey messages in terms and styles that are easily understood by the patient while being sensitive to age differences in particular the aging population. If dental hygienists can learn and master interpersonal communication skills as students, they may be more successful as practicing clinicians. As stated by Walker et al. (2016) students may feel more confident in treating patients that are unlike them such as geriatric patients if they have consistent experience with such interactions.

Allied dental education recognizes the importance of competence in interpersonal communication for dental hygiene students for all populations. A proven instrument such as the Gap-Kalamazoo is useful to determine student competence in communication. In evaluating interpersonal communication skills, self-assessment has been shown to improve performance in students who utilized its practice (Blue, 2006). Additionally, the patient perspective provides another dimension in feedback on the interpersonal communication skills of the beginning clinician. Studying the implementation of an educational module on communicating with the geriatric patient with subsequent self, patient, and faculty assessment may provide insight on pedagogy and assessing interpersonal communication for patients in specific populations.

Methodology

Research Method or Design

This study used a quasi-experimental design to gather quantitative data from a convenience sample. Pre-tests and post-tests in addition to self, faculty, and patient assessments provided data. Interviewing participants for focus groups is time intensive and videotaping was not an option due to limited clinic space. For these pragmatic reasons, role-play, observation, digital voice recording, and surveys were the best tools for data collection. A rubric derived from the Gap-Kalamazoo was utilized by the Principal Investigator (PI) to provide feedback to dental hygiene students on their interpersonal communication skills. Furthermore, this rubric was used to collect data on student's interpersonal communication skills through implementing self, faculty, and patient assessments.

Procedures

Human Subjects Protection/Informed Consent

Approval was obtained from both Eastern Washington University (EWU) Institutional Review Board (IRB) and University of South Dakota (USD) IRB. Participants personal information was kept confidential. To further ensure confidentiality, participants were informed not to write their names on the pre- or post-tests, instead each participant was asked to create an identification (ID) number using the first two letters of their birth month and the last four digits of their phone number. All survey answers remained confidential. Informed consent (see Appendix F) was sent to the students via

email before participation in the lecture. All data was kept on a password protected computer or in a locked office that only the PI had access to.

Sample Source, Plan, Size, and Description of setting

Sample Source. The target population was students enrolled in an accredited DH program. A convenience sample was used for this study and consisted of students enrolled in the Bachelor of Science Dental Hygiene program at USD located in South Dakota where the PI is an instructor and has access to the study population.

Plan. Inclusion criteria for participation in this study included enrollment in DHYG 336 Clinical Skills & Development II or DHYG 435 Dental Hygiene Practicum II. Not having experienced formal training on communication with the geriatric population during their first semester, the communication module was designed towards the current knowledge of first-year students. Although second-year students already completed training on geriatric communication during their first year of courses, with an additional year of clinical experience, second-year dental hygiene students were assessed to evaluate the progression of knowledge.

Size. The number of subjects to be included was based on enrollment at USD and included 31 first-year and 31 second-year dental hygiene students. This size is comparable to other dental hygiene programs across the nation and therefore aids in replication. All 62 students were invited to participate.

Description of the Setting. The educational module was presented in a classroom at the USD Dental Hygiene Department. Student and patient interactions took place in the USD DH campus clinic.

Variables

The independent variable was the communication module presented to the students; the dependent variables are the interpersonal communication skills of each student. The Gap-Kalamazoo served as a valid and reliable basis for a self-designed rubric to determine effective communication skills.

Instruments

The instruments used during this pilot project included a demographic survey, pre-test, post-test, second post-test, and Gap-Kalamazoo Communication Skills Assessment Form-Adapted to Dental Hygiene (GKCSAF-DH) rubric. The demographic survey was designed to identify students as first- or second-year and captured information on age, ethnicity, and primary language (see Appendix G). The design for the pre and post-test was inspired by similar research by Anyan (2012), who also focused on communication. The Likert-type surveys were designed with the same questions from pre-test to post-test to assist in data analysis at the completion of the study (see Appendices H, I, and J). The decision to utilize the Gap-Kalamazoo was influenced by the fact that the patient assessment form is written at a sixth grade reading level, making comprehension easier for the intended population. Yoon and Michaelsen (2015) assembled a package of the KCS Assessment Tools and report that the Gap-Kalamazoo exhibits “high measures of internal consistency, with a Cronbach’s alpha of 0.84 for the original seven Kalamazoo dimensions, and 0.87 for the nine dimensions of the expanded instrument” (p. 3). Permission to use the Gap-Kalamazoo was granted by contacting author Aaron W. Calhoun (see Appendix K). Furthermore, to address grammar usage for

the faculty, patient, and student, the GKCSAF-DH was developed with three iterations (see Appendices L, M, and N).

Equipment

Digital voice recorders were utilized to collect conversations between students and patients. The students, PI, and patients assessed communication using the appropriate iteration of the GKCSAF-DH rubric in paper format. The PI transferred GKCSAF-DH scores to an electronic file on Excel for data analysis.

Steps to Implementation

- Approval for research was obtained through the IRB at USD and EWU; it was deemed that activities described for this study would be conducted for quality improvement purposes.
- The purpose of the study and informed consent were provided prior to the lecture via student e-mail addresses. A paper copy was handed out to each student prior to the educational module. The students were enrolled in the study once they reviewed the informed consent and chose to fill out the demographic survey.
- First- and second-year students were given ten minutes to take a pre-test to gauge their perceived abilities and confidence in communicating with the geriatric population.
- A 45 minute presentation on communication with the geriatric population was presented to first- and second-year students. This presentation included an interactive PowerPoint® (PPT) lecture. The PI developed learning objectives and content to meet the original seven competencies of

the Kalamazoo Consensus Statement framework and two additional dimensions: demonstrates empathy and communicates accurate information. The PI answered any questions from the participants at the completion of the educational module.

- First- and second-year students were given ten minutes to take a post-test immediately after the lecture to evaluate if perceived abilities and confidence in communicating was gained. The post-test survey had the same quantitative items as the pre-test, followed by one open ended qualitative question.
- The GKCSAF-DH rubric was shown and explained to students.
- Students were taught how to use the handheld EVISTR 16GB digital voice recording devices, including how to record and erase conversations.
- A role-play event with peers took place to practice utilizing the digital voice recording devices while the PI observed interactions and provided feedback as needed.
- Students were then taught how to upload their audio recordings to the USD D2L Learning Management platform for playback and assessment.
- When ready to review the care plan and provide oral health education (OHE) to a patient in the clinical setting, students signed out a digital recording device from the designated area in clinic. The student prepared the digital recording device, alerted the patient to its usage, and began the recording. All patients sign a Consent for Treatment and Release form at the beginning of their appointment which includes being recorded.

- Students recorded their conversation and then presented the patient with a manila envelope with a paper copy of the patient version of the GKCSAF-DH rubric to assess the student's communication skills. Students were instructed to inform their patients that their answers should be honest in order to promote student learning, that responses will remain anonymous, and the results did not impact student grades. By completing the survey, patients were giving consent for their answers to be included in the study. The student then stepped away from the operatory while the patient completed the survey. Once completed, the student informed their instructor to collect and turn in the survey. This rubric included the student's personal identification number and was turned into the PI after completion.
- Students uploaded the digital file of their conversation to the D2L website and filled out a paper copy of the self-assessment version of the GKCSAF-DH rubric while they listened to the recording. This rubric was then turned into the PI for data collection. Once the patient audio files were uploaded successfully to the D2L website, students deleted the file from the digital recording device and returned it to the designated area in clinic.
- The PI accessed D2L and filled out a paper copy of the faculty version of the GKCSAF-DH rubric while listening to each student's uploaded audio file.
- At the completion of the study, participating students were given access to all the completed rubrics pertaining to them for learning purposes.

- Completion of a patient recording, patient assessment survey, and self-assessment survey was counted towards fulfillment of one clinical competency for oral health education. As an incentive for full participation, each student who completed all pre and post-tests and two self-assessment surveys was entered into a raffle for a $50 Amazon gift card. Each additional self-assessment earned a student another entry into the raffle. The winner was chosen at the completion of the study using a randomizer.
- After four weeks of patient interaction, students were asked to complete another post-test survey identical to the pre-test to determine if their perceived abilities and confidence changed after having several patient care encounters.

Summary

Proper, effective communication between healthcare providers and patients is a key factor in the overall success of treatment. As part of the discovery phase of research, learners' communication skills were assessed by themselves, the PI faculty member, and their patients using the appropriate iteration of a standardized communication rubric; the GKCSAF-DH. Determining relevant content and pedagogy as well as best practices for assessing students' communication with geriatric patients may aid dental hygiene programs in their development of effective curricula and assessment methods ultimately resulting in outcome measurements.

Results

Description of Sample

This study utilized a convenience sample of students in their first and second year of the USD dental hygiene program. First-year students were enrolled in DHYG 336; second-year students were enrolled in DHYG 435. Each cohort attended a communication module as part of their coursework. Of the 31 first-year students who participated in the communication skill module, 100% (*n*=31) consented to participate in the study. Of those students, 31 completed the pre-test, post-test, and second post-test after patient interaction. Of the 31 second-year students who participated in the communication skill module, 81% (*n*=25) consented to participate in the study. Of those students, 25 completed the pre-test, while 21 completed the post-test. The second post-test after patient interaction was distributed to 30 second-year students attending a scheduled class on campus; all 30 students completed the post-test but only those who consented to participate (*n*=25) were included in the study data.

In the demographic category, over 90% of the sample population in each cohort identified as Caucasian with their primary language being English. Average age of first-year students was 21, with the majority (81%) reporting between ages 19-21. Average age of second-year students was 22 with over half of the cohort (*n*=13) reporting this exact age. Demographic analysis suggests both cohorts to be homogenous sample populations which preclude generalization of results beyond the study sample. See Table 3 for demographic specifics.

Table 3

Demographic Characteristics of Study Participants

Characteristic	First-year students (*n*=31)	Second-year students (*n*=25)
Language		
English	100% (*n*=31)	92% (*n*=23)
Khmer		4% (*n*=1)
Other		4% (*n*=1)
Ethnicity		
Caucasian	94% (*n*=29)	92% (*n*=23)
Asian or Asian American	3% (*n*=1)	4% (*n*=1)
American Indian or Alaska Native	3% (*n*=1)	
Other		4% (*n*=1)
Age		
19-21	81% (*n*=25)	32% (*n*=8)
22-25	13% (*n*=4)	52% (*n*=13)
26-29	6% (*n*=2)	8% (*n*=2)
30+		4% (*n*=1)
No answer provided		4% (*n*=1)

Statistical Analysis

Data was collected from pre-test scores (*N*=56), post-test scores (*N*=52), second post-test scores after patient interaction (*N*=56), faculty assessment scores (*N*=62), patient assessment scores (*N*=62), and student self-assessment scores (*N*=62). Demographic data in addition to all pre-test and post-test scores were coded into a Microsoft Excel® spreadsheet.

Data analysis for the Gap-Kalamazoo Communication Skills Assessment Form-Adapted to Dental Hygiene (GKCSAF-DH) was performed by entering scores into a customized spreadsheet obtained from author Aaron W. Calhoun upon request (see Appendix O). Overall average scores were calculated for each rater (faculty, patient, student) by averaging dimension specific scores. Next, faculty and patient scores were

averaged together to provide an overall average score in addition to a score for each specific dimension. Faculty gap analysis was created by subtracting the student's average self-score from the faculty average score for each dimension. Overall gap analysis was generated by subtracting the student's average self-score from the overall average score.

Additional data analysis for all scores was completed using IBM® SPSS® Statistics software Version 27. Descriptive statistics were used to analyze quantitative data.

A non-parametric Wilcoxon Signed Ranks test analyzed Likert scores on the pre-test, post-test, and second post-test to determine if the communication module affected students' perceived abilities. A General Linear Model (GLM) Repeated Measures ANOVA (Analysis of Variance) analyzed differences between the pre-test, post-test, and second post-test Likert scores both within and between subjects to evaluate the effectiveness of the communication module. A one-group, three-time repeated measures test was completed using an ANOVA to determine if Likert scores from pre-test, post-test, and second post-test indicated a significant improvement in student's confidence. Similarly, two-way ANOVA tests were utilized to evaluate statistical differences between first- and second-year students. To further evaluate GKCSAF-DH Likert scores, a GLM ANOVA was utilized to determine if there were statistical differences between faculty, patient, and student self-assessment.

Null hypothesis one. The first null hypothesis states: An educational module on interpersonal communication skills for the geriatric population does not affect students' perceived abilities or knowledge in communicating with the geriatric patient.

Pre and post-test, and the pre and second post-test scores were statistically analyzed. Likert-type survey scores ranged from *1–Strongly Disagree* to *5–Strongly Agree*, along with *1–Poor* to *5–Excellent*. For comparison purposes, identical questions were present on pre-test, post-test, and second post-test. Questions pertaining specifically to students' perceived abilities were selected for analysis (Q12 and Q13). Table 4 shows these selected questions with a comparison of mean scores and changes from pre-test, post-test, and second post-test from all student surveys.

Table 4

Wilcoxon Signed Ranks test Comparison of Mean (M) Scores and Changes for Pre-test, Post-test 1, and Post-test 2

Item	Pre *M* (*N*=56)	Post 1 *M* (*N*=52)	Post 2 *M* (*N*=56)	Z	*p*
Q12 - How would you rate your communication skills as a clinician?	3.27	3.37	3.66		
Change from pre to post 1				-1.000[b]	.317
Change from pre to post 2				-3.321[b]	.001*
Q13 - Rate your knowledge of patient communication in the clinician-patient relationship.	3.05	3.52	3.80		
Change from pre to post 1				-4.097[b]	.000*
Change from pre to post 2				-5.039[b]	.000*

Note. Statistical significance found at *$p < .05$

Results showed "How would you rate your communication skills as a clinician?" as not statistically significant ($p = .317$) from pre-test to post-test but indicated there was a statistical significance ($p = .001$) from pre-test to second post-test. Regarding knowledge gained from the module, results showed a statistical significance ($p < .001$) from both pre-test to post-test and pre-test to second post-test for the question "Rate your knowledge of patient communication in the clinician-patient relationship.".

When comparing the first- and second-year students' abilities for "How would you rate your communication skills as a clinician?" there is no statistically significant difference (p= .606) in how students progress over time. However, when looking at the mean scores from each cohort, there was a statistical significance (p= .030) between first- and second-year students. When evaluating first- and second-year students for "Rate your knowledge of patient communication in the clinician-patient relationship." there was not a statistically significant difference (p= .204) in how students rated their knowledge accumulation, or perception of it over time. When analyzing each cohort's mean scores, a statistical significance was found (p= .039) between first- and second-year students. Table 5 shows the estimated marginal means, standard deviation, and *p*-values for both questions analyzed above.

Table 5

Analysis of Questions 12 and 13: Mean (M), Standard Deviation (SD), and p-value

Item	First-year students (n=31)		Second-year students (n=21)		
	M	*SD*	*M*	*SD*	*p*-value
Q12 - How would you rate your communication skills as a clinician?	3.280	.105	3.651	.128	
Comparison of cohorts over time					.606
1st year vs. 2nd year					.030*
Q13 - Rate your knowledge of patient communication in the clinician-patient relationship.	3.344	.078	3.603	.094	
Comparison of cohorts over time					.204
1st year vs. 2nd year					.039*

Note. Statistical significance found at *$p < .05$

Additional statistical analysis was done to further evaluate the null hypothesis. A comparison of mean scores from the educational module was done on questions one through eleven across pre-, post-, and second post-test to determine if the module was effective at increasing overall student knowledge (see Table 6). Mauchly's Test indicated that the assumption of sphericity had been violated, $x^2(2) = 12.240$, $p = .002$. Therefore, reporting Greenhouse-Geisser results, findings are significant; ($p < .001$).

Table 6

Repeated Measures ANOVA Comparison of Scores from Educational Module

Scores	*M*	*SD*	*N*	*p*-value
Pre-test	4.0052	.3025	52	
Post-test	4.2692	.2875	52	
Post-test 2	4.1451	.3335	52	
Pairwise Comparisons				
Pre vs. Post 1				.000*
Pre vs. Post 2				.006*
Post 1 vs. Post 2				.001*

Note. Statistical significance found at *$p < .05$

Due to the significant results in analysis of the improved knowledge of patient communication, the null hypothesis is rejected. Due to no significant results showing an increase in student's perceived communication abilities, this portion of the null hypothesis is accepted.

Null hypothesis two. The second null hypothesis states: An educational module on interpersonal communication skills for the geriatric population does not affect students' confidence in communicating with the geriatric patient.

Table 7 shows descriptive statistics and pairwise comparisons for the question "I am confident in my abilities to communicate with the geriatric population.".

Table 7

Comparison of Scores for Question 11: I am Confident in My Abilities to Communicate with the Geriatric Population

Scores	*M*	*SD*	*N*	*p*-value
Pre	3.75	.71	52	
Post	3.94	.64	52	
Post 2	4.06	.73	52	
Pairwise Comparisons				
Pre vs. Post 1				.024*
Pre vs. Post 2				.008*
Post 1 vs. Post 2				.278

Note. Statistical significance found at *$p < .05$

When analyzing data from all students (N=52), there was a significant increase (p= .010) in confidence over time. In comparing results from pre-test, post-test, and second post-test there was a significant increase in confidence from both pre-test to post-test (p= .024) and pre-test to second post-test (p= .008). However, results indicated no significant difference in confidence from post-test to second post-test (p= .278). Due to the increase in confidence after completion of the module, the null hypothesis can be rejected.

Null hypothesis three. The third null hypothesis states: Given a standardized communication rubric, there is no difference between how faculty assess students, patients assess students, and students assess themselves.

Scores from the GKCSAF-DH rubric (first encounter, n=32) were analyzed with a Friedman test. Results indicated a difference exists between faculty, patient, and student

self-assessment, x^2 (2, n=32) = 42.91, $p < .001$. An additional GLM ANOVA for the student's first patient encounter confirmed $p < .001$ indicating a significant difference between assessments. When comparing all three assessments (faculty, patient, and student) during the first encounter (n=32), there was a significant difference ($p < .001$) when patient scores were evaluated against faculty and student assessments; there was no significant difference between faculty and student assessments (p= .056). Second encounter (n=26) scores from the GKCSAF-DH rubric were analyzed with a GLM ANOVA; Mauchly's Test indicated that the assumption of sphericity had been violated, $x^2(2) = 11.061$, $p = .004$. Therefore, reporting Greenhouse-Geisser results, findings are significant between faculty, patient, and student self-assessment scores ($p < .001$). Further analysis with pairwise comparisons suggests a large true difference between the three separate assessments: faculty and student (p= .002), faculty and patient ($p < .001$), and patient and student ($p < .001$). Table 8 shows the comparisons for faculty, patient, and student assessments during both encounters.

Table 8

Faculty, Patient, and Self-assessment Scores

Scores	First Encounter (n=32)	Second Encounter (n=26)
	p-value	p-value
Faculty vs. Patient	.000*	.000*
Faculty vs. Student	.056	.002*
Patient vs. Student	.000*	.000*
Faculty vs. Patient vs. Student	.000*	.000*

Note. Statistical significance found at *$p < .05$

Summary scores for both cohorts from the GKCSAF-DH rubric are shown in Figure 4 and Figure 5. Total average scores for first-year students from faculty, patients,

overall, and self-assessment were respectively 2.98, 4.75, 3.87, and 3.40. The average faculty gap analysis for first-year students was -0.42; this was not statistically significant for either over-appraisal or under-appraisal. Total average scores for second-year students from faculty, patients, overall, and self-assessment were respectively 3.34, 4.88, 4.11, and 3.50. Average faculty gap analysis was not statistically significant as an over-appraisal or under-appraisal at -0.16.

Figure 6 and Figure 7 show the faculty gap analysis; statistical significance is found at ±0.5. First-year students over-appraised their abilities in five categories: Builds a Relationship (-0.65), Opens the Discussion (-0.65), Understands the Pt's Perspective (-0.65), Reaches Agreement (-0.88), and Provides Closure (-0.50). Second-year students only over-appraised their abilities in one category; Provides Closure (-0.80). Second-year students under-appraised their abilities in one category; Gathers Information (0.60). First-year students did not under-appraise their abilities in any category. Table 9 shows further analysis of data from the GKCSAF-DH rubric, including a comparison of all patient encounters between first and second-year students. Due to findings indicating no significant difference between faculty and student assessments from the first patient encounter, the null hypothesis is partially accepted. Nevertheless, a majority of the data from both first and second patient encounters reflects a significant difference between assessments, this indicates the null hypothesis is also partially rejected.

Figure 4

Summary Scores: 1st Year Students

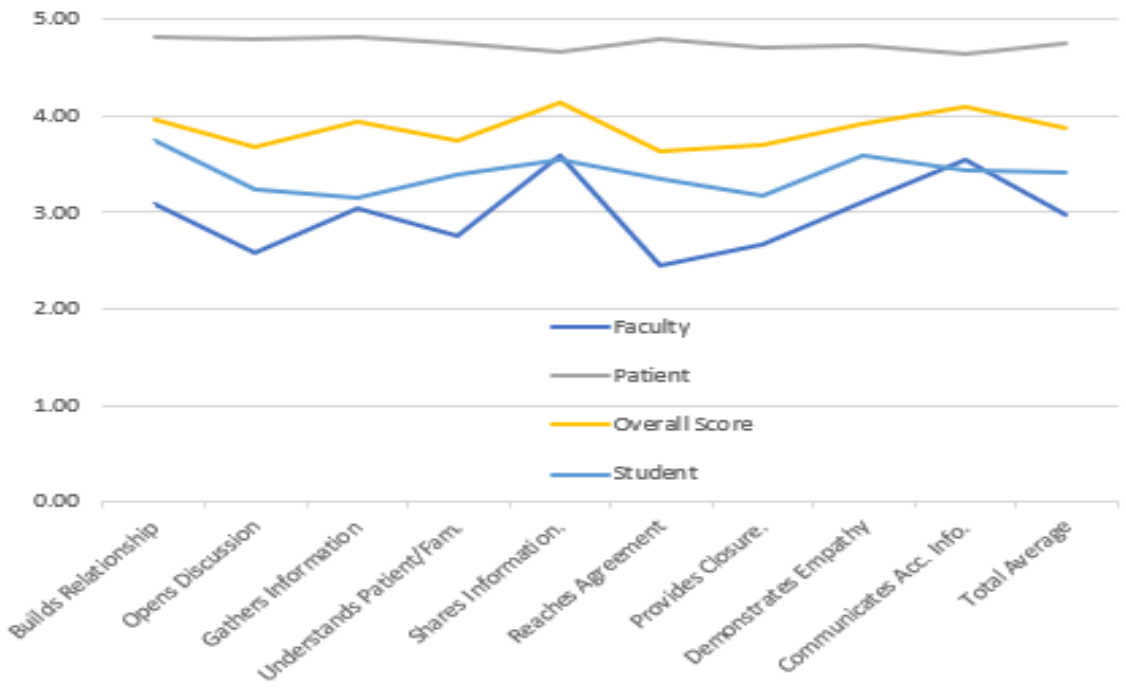


Figure 5

Summary Scores: 2nd Year Students

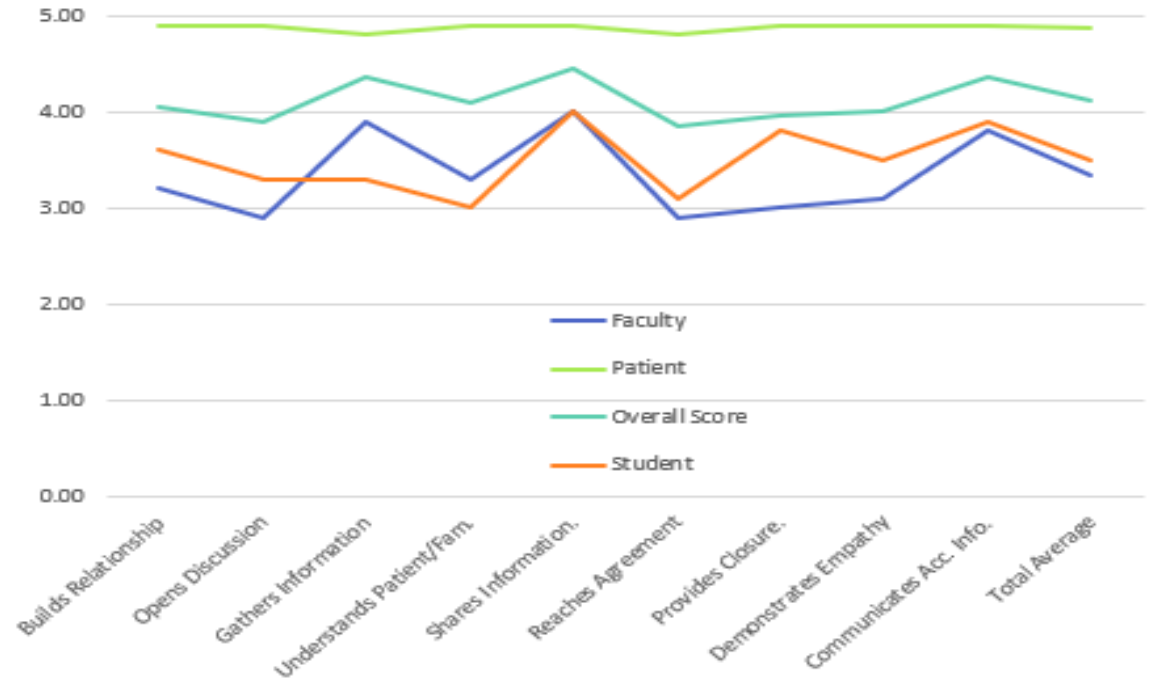


Figure 6

Faculty Gap: 1st Year Students

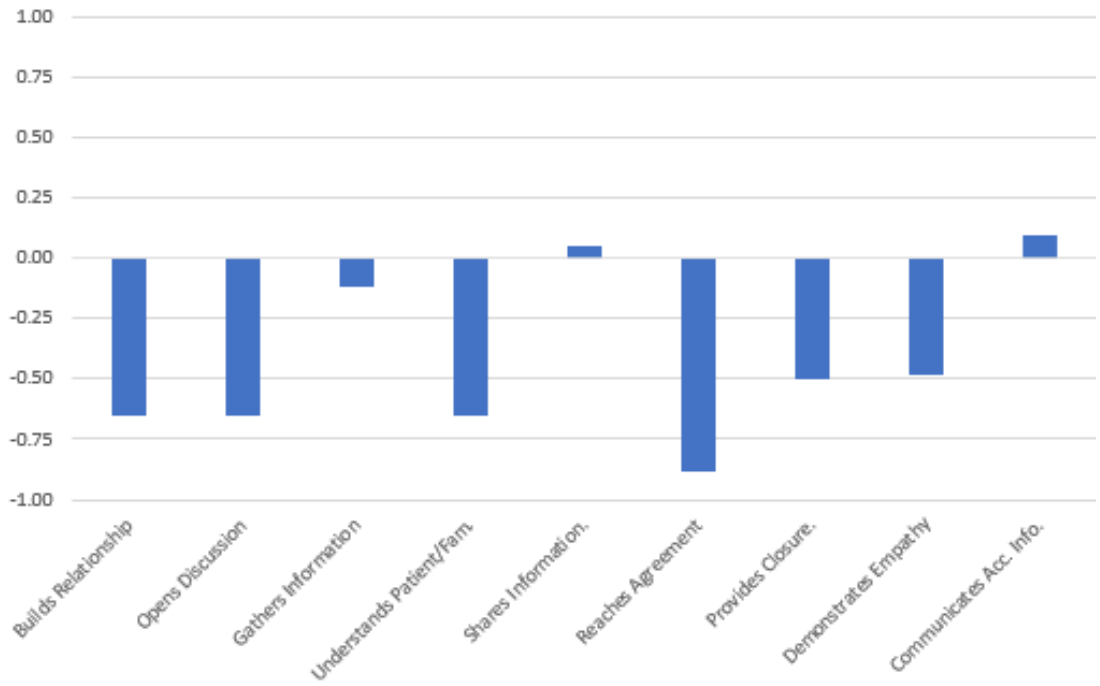


Figure 7

Faculty Gap: 2nd Year Students

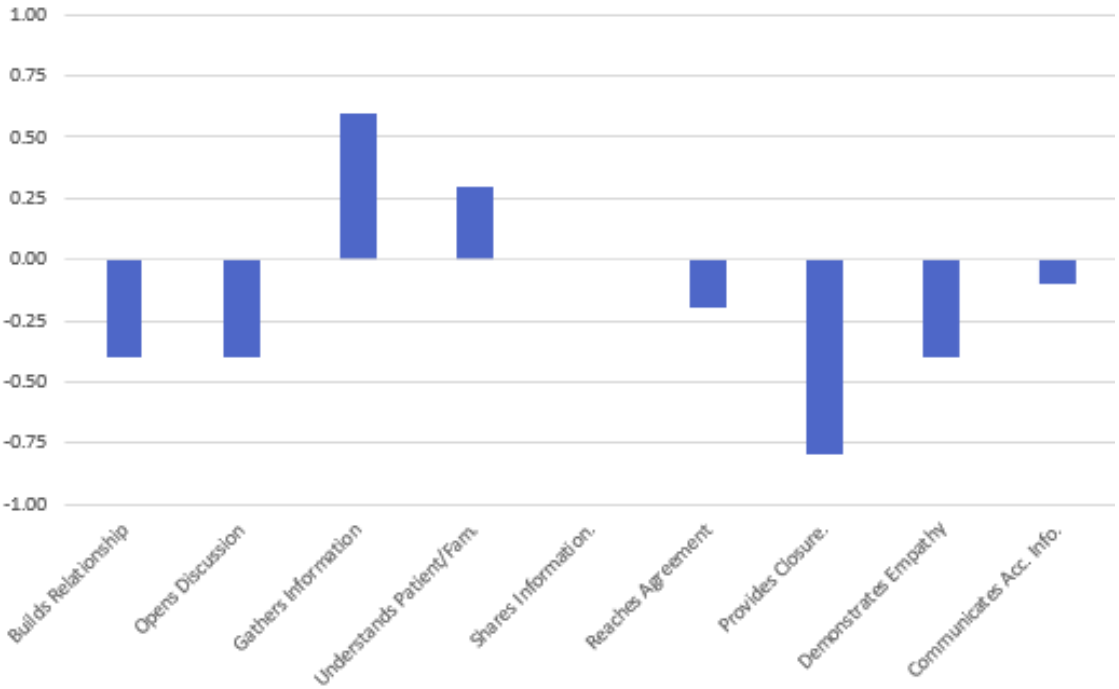


Table 9

Comparison of GKCSAF-DH Assessments Between 1st Year (n=52) and 2nd Year (n=10) Students

Communication Skill		Faculty *M*	Patient *M*	Overall Score	Student *M*	Faculty Gap Analysis	Appraisal
A. Builds a Relationship	1st year	3.10	4.83	3.96	3.75	-0.65*	Over
	2nd year	3.20	4.90	4.05	3.60	-0.40	Accurate
B. Opens the Discussion	1st year	2.58	4.79	3.68	3.23	-0.65*	Over
	2nd year	2.90	4.90	3.90	3.30	-0.40	Accurate
C. Gathers Information	1st year	3.04	4.83	3.93	3.15	-0.12	Accurate
	2nd year	3.90	4.80	4.35	3.30	0.60*	Under
D. Understands the Patient's Perspective	1st year	2.75	4.75	3.75	3.40	-0.65*	Over
	2nd year	3.30	4.90	4.10	3.00	0.30	Accurate
E. Shares Information	1st year	3.60	4.67	4.13	3.55	0.05	Accurate
	2nd year	4.00	4.90	4.45	4.00	0.00	Accurate
F. Reaches Agreement	1st year	2.46	4.81	3.63	3.35	-0.88*	Over
	2nd year	2.90	4.80	3.85	3.10	-0.20	Accurate
G. Provides Closure	1st year	2.67	4.72	3.70	3.17	-0.50*	Over
	2nd year	3.00	4.90	3.95	3.80	-0.80*	Over
H. Demonstrates Empathy	1st year	3.12	4.73	3.92	3.60	-0.48	Accurate
	2nd year	3.10	4.90	4.00	3.50	-0.40	Accurate
I. Communicates Accurate Information	1st year	3.54	4.65	4.10	3.44	0.10	Accurate
	2nd year	3.80	4.90	4.35	3.90	-0.10	Accurate
Total Average	1st year	2.98	4.75	3.87	3.40	-0.42	Accurate
	2nd year	3.34	4.88	4.11	3.50	-0.16	Accurate

Note: Statistical significance for Gap Analysis found at ±0.5

Discussion

Summary of Major Findings

The results of this study showed statistically significant data that supports an educational module increases student's knowledge on how to communicate with the geriatric population. Data comparisons between first- and second-year students were conducted to identify trends. Results from pre-test to post-test indicate the educational module was effective in increasing knowledge in both first- and second-year students. However, there was no significant difference in the rate at which students gained knowledge. Looking solely at mean scores, a significant difference was indicated between first- and second-year students which was expected because of the additional education and hands-on experience of the second-year students. Results showed a statistical difference in student's confidence levels in communicating with geriatric patients after the educational module. There was no statistical difference in how students rated their overall communication skills from pre-test to post-test, but after four weeks of patient interactions, students indicated a significant increase in how they perceived their communication skills. The study also utilized a rubric derived from the Gap-Kalamazoo (see Appendices C, D, and E). While evaluating the difference between faculty, patient, and student self-assessment scores, the data generally indicated a significant difference between all three components. However, when evaluating students only on their first interaction with a patient, there was no statistical difference between student and faculty scoring. This chapter will discuss interpretation of data analysis, how this study may

influence dental hygiene education practices, in addition to limitations and recommendations for further research.

Discussion

Student Knowledge and Perceived Abilities

This study found a module on communicating with the geriatric population is effective in increasing student knowledge. Significant findings are noted from pre-test to post-tests and not from post-test to second post-test. This may indicate that patient experiences do not greatly affect the amount of knowledge students have in regard to communicating with the geriatric patient. Overall knowledge from pre-test to second post-test indicates students can retain knowledge learned from a module. This is significant because it shows efficacy of the module which was the underlying goal. Because both first- and second-year students increased at a similar rate after implementation of the educational module, this indicates the module was effective for both cohorts and not necessarily tailored to one specific group. This study found a module on communicating with the geriatric population does not have an impact on how students perceive their current level of communication skills. This is a significant finding because this is not something the module was designed to change; this indicates the module was only focusing on knowledge accumulation and not on current skills. Anyan's study done in 2012 had similar results when asking the question "How would you rate your communication skills as a clinician?"; there was no statistically significant improvement from pre-test to post-test. However, when looking at a one-year post-assessment, there was a significant improvement in perceived abilities. Although the timeframe is not the same, comparison of these research studies shows similar results;

improvement in perceived abilities during the second post-test. The CODA standards include a requirement for graduates of a dental hygiene program to be proficient in a range of communication skills for a diverse population, including geriatrics (CODA, 2018, p. 23). The findings of this study show that the implementation of this educational module enhances student's knowledge of interpersonal communication skills. A similar study done by Anyan (2012) revealed comparable results that showed a statistically significant improvement in student knowledge of effective patient-doctor communication. Both studies demonstrate improvement in student knowledge when an educational module is implemented.

When comparing the first and second post-tests, the PI expected a higher score on the second post-test. The PI attributes the lack of statistical findings to the four-week timeframe between the module and the second post-test. During this time, students may have reverted to their old ways of thinking about communication, this indicates a need for continued emphasis on communication. Students also might not have been as attuned to specific information as they would have been immediately following the module. In either case, there was still an increase in knowledge from pre-test to second post-test which means students benefitted from the educational module.

As findings demonstrate an improvement in student knowledge, the PI recommends a module specific to communication with the geriatric population be implemented into the curriculum for all dental hygiene programs. A module tailored to this population has shown to improve knowledge for both first- and second-year students suggesting that this module could be implemented at any time during the dental hygiene curriculum and still be beneficial to students.

Student Confidence

An educational module has a direct effect on how confident students feel in communicating with the geriatric population. This infers the increase in knowledge concerning the geriatric population allows students to be more confident in approaching certain situations and providing accurate information while communicating with this particular group. This is reflective of the educational module and its effectiveness. Findings indicated a significant difference in confidence from pre-test to both post-tests, but no increase in confidence from post-test to second post-test. This suggests student's confidence in abilities was positively impacted by the module and not solely from interactions with patients over the course of four weeks. Although there was not enough data for results to be considered statistically significant, second-year students did report higher levels of confidence on the pre-, post-, and second post-test when compared to first-year students. These findings are consistent with research from Walker et al. (2016) who reported significant findings between first- and second-year students; students with less clinical experience tend to demonstrate a lower level of confidence when interacting with patients. Including a module specific to the geriatric population to help students develop confidence in their communication skills is recommended for all dental hygiene programs. To further investigate the effectiveness of the module, implications for further research include a control group of students not providing treatment in the clinic setting to compare with students involved in patient treatment after the completion of the module.

Assessment

When looking at how faculty, patient, and student self-assessment scores relate to one another, there seems to be an overall significant difference between the three. This is important to note because the literature is currently lacking in research that utilizes patient feedback to evaluate communication skills. In fact, a systematic review of studies on communication skills done in 2010 specific to dental hygiene revealed patient feedback was not obtained as a way to assess student's skills (Wener, et al., 2011). This study utilized patient feedback and revealed overwhelmingly high scores from patients when compared to faculty scores. The literature indicates that patient-clinician relationships are often better measured by patient feedback than outside observation (Anyan, 2012; Wener et al., 2011). Patient feedback may be more indicative of true experiences and feelings than those merely perceived by the faculty member. The PI recommends dental hygiene programs include patient feedback on a routine basis as an additional way to further assess student communication skills.

When investigating the impact of student self-assessment and its correlation to feedback provided by faculty and patients, the literature indicates students tend to either under-appraise or over-appraise their abilities (Yoon & Michaelsen, 2015). When looking at Faculty-Gap Analysis, this study found overall, students assessed themselves in a way that was equal to faculty. Second-year students were better at assessing their abilities, when compared to faculty scores, than first-year students. First-year students over-appraised their abilities more often than second-year students. Self-assessment scores increased from first encounter to second encounter likely indicating students felt they improved on the skills they noticed were lacking after the first assessment. Correlational

analysis of rubric scores between faculty, patients, and students indicates patient scores did not seem to have an effect on how students rated their abilities. With patient scores significantly higher than student or faculty scores, these scores may not be the best representation of how the student is actually performing. However, research from Shah (2010) reveals that although patients tend to give high ratings, the process of receiving assessments from multiple sources is informative and beneficial to student learning. Similarities between students and faculty indicate a combination of these evaluation strategies might be a potential method of increasing student awareness of their ability to communicate with patients. In addition, audio recordings may be a good option as a way of meeting program competencies, ADEA competencies, and or CODA standards.

The PI held the assumption that there would be a significant difference between faculty and student self-assessment across all encounters. When analyzing students first encounters (n=32) with a patient, there was not a significant difference between student and faculty assessment. When analyzing second encounters (n=26) with patients, there was a significant difference between student and faculty assessments. Sample size for each encounter would generally indicate the opposite of what was found. It is possible that after their first patient interaction, students became more confident in their abilities, inflating their self-assessment scores. The assumption that patient scores would be inflated proved to be true. Most patients gave a score of 5 across the board for all answers. There is a possibility that patients were related to students and did not want to give them a bad score even though patients and students were informed no scores would impact student grades. Other non-related patients have been coming to the clinic for a

very long time and appreciate the services students provide, this may have influenced their answers on the survey.

Limitations

For pragmatic purposes, a small sample size from one dental hygiene program was used which limited generalizability of the findings. With participation in the study being voluntary, some participants chose to only participate in a portion of the study. Having a longer timeframe to collect data would have resulted in more students participating because not all second-year students were scheduled to treat patients in the campus clinic during the study timeframe. Fewer study participants meant some tests were underpowered for them to be considered statistically significant; specifically, when evaluating Question 11 "I am confident in my abilities to communicate with the geriatric population" across time (pre-, post-, second post-test) for the second-year students.

During the study, a global pandemic with COVID-19 restrictions posed a challenge to gaining access to patients, especially geriatric patients who are considered a vulnerable population. Due to this limitation, student interactions with patients were not restricted to individuals in this category.

Comparing individual results on a Likert-type survey is difficult because there are limited options available for participants to choose from; this can skew scores. The pre-, post-, and second post-test results may have been more significant if the "neutral" option would have been removed. This would have required students to commit to either agreeing or disagreeing with the statement, resulting in more substantial results.

The use of paper forms was cumbersome for the PI; utilizing electronic forms would have allowed for faster collection and analysis of data. The USD D2L learning

management platform did not allow one of the recordings to upload appropriately which resulted in the student emailing their recording to the PI instead. Limitations of this study should be considered when conducting future research on this topic.

Recommendations/Suggestions for Future Research

The PI recommends increasing sample size and length of study timeframe in future research. For GKCSAF-DH findings to be generalized to interactions specific to the geriatric population, more encounters with this population would be necessary. To reach a larger audience, it may be beneficial to replicate the study in different dental hygiene programs across the United States; this would allow for dissemination of findings to the broader scope of dental hygiene practice. To further investigate differences between faculty, patient, and student self-assessment scores, the PI suggests recruiting additional faculty to assess interactions. Extra faculty assessments would allow for a more comprehensive average score that could potentially impact statistically significant findings. Another component of the Gap-Kalamazoo would be to integrate scores from peers into the overall assessment score to add another dimension to the data. The addition of a standardized patient may also help collect more accurate assessments since the patients in this study scored students high. Data collection may be made easier by the use of electronic forms (possibly via Survey Monkey) instead of paper forms. The use of electronic forms for the pre-, post-, and second post-test would be a convenient way to collect, analyze, and store student results. To reduce confounding variables from second-year students already having exposure to a geriatric communication module, a random sample or control group could be utilized. In addition, continuing the study over

the course of several semesters while testing the same subjects could help reduce effects of confounding variables.

Conclusions

Effective communication between healthcare providers and patients is a key factor in the overall success of dental hygiene treatment. The results of this study demonstrate the use of an educational module on communication with the geriatric population as an effective method to increase knowledge and confidence for dental hygiene students. A module such as the one employed during this study would be helpful in meeting CODA guidelines for graduate requirements. In addition, use of a standardized rubric to assess communication skills such as the GKCSAF-DH is an effective way to assess student's abilities. With notable differences between faculty, patient, and self-assessments, students may be able to gain new perspectives on their abilities and make changes to positively enhance future patient interactions.

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Appendix A

Figure 1.11

Kalamazoo Essential Elements Communication Checklist

Date: _____ Setting: _____
Learner: _____
Observer: _____

	Done well	Needs improvement	Not done	Not applicable
Build a Relationship				
Greets and shows interest in patient as a person	❑	❑	❑	❑
Uses words that show care and concern throughout the interview	❑	❑	❑	❑
Uses tone, pace, eye contact, and posture that show care and concern	❑	❑	❑	❑
Open the Discussion				
Allows patient to complete opening statement without interruption	❑	❑	❑	❑
Asks "Is there anything else?" to elicit full set of concerns	❑	❑	❑	❑
Explains and/or negotiates an agenda for the visit	❑	❑	❑	❑
Gather Information				
Begins with patient's story using open-ended questions ("Tell me about ...")	❑	❑	❑	❑
Clarifies details as necessary with more specific or "yes/no" questions	❑	❑	❑	❑
Summarizes and gives patient opportunity to correct or add information	❑	❑	❑	❑
Transitions effectively to additional questions	❑	❑	❑	❑
Understand the Patient's Perspective				
Asks about life events, circumstances, other people that might affect health	❑	❑	❑	❑
Elicits patient's beliefs, concerns, and expectations about illness and treatment	❑	❑	❑	❑
Responds explicitly to patient statements about ideas, feelings, and values	❑	❑	❑	❑
Share Information				
Assesses patient's understanding of problem and desire for more information	❑	❑	❑	❑
Explains using words that are easy for patient to understand	❑	❑	❑	❑
Checks for mutual understanding of diagnostic and/or treatment plans	❑	❑	❑	❑
Asks whether patient has any questions	❑	❑	❑	❑

Appendix A continued

Figure 1.11 **Kalamazoo Essential Elements Communication Checklist (cont.)**

	Done well	Needs improvement	Not done	Not applicable
Reach Agreement (if new/changed plan)				
Includes patient in choices and decisions to the extent s/he desires	❑	❑	❑	❑
Asks about patient's ability to follow diagnostic and/or treatment plans	❑	❑	❑	❑
Identifies additional resources as appropriate	❑	❑	❑	❑
Provide Closure				
Asks whether the patient has questions, concerns, or other issues	❑	❑	❑	❑
Summarizes	❑	❑	❑	❑
Clarifies follow-up or contact arrangements	❑	❑	❑	❑
Acknowledges patient and closes interview	❑	❑	❑	❑

Comments:

_____

_____

_____

_____

_____

_____

Source: © Bayer-Fetzer Group on Physician-Patient Communication in Medical Education, May 2001. Reference: The Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education. Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement. Academic Medicine 2001; 76:390–393. Used with permission.

Appendix B

Kalamazoo Essential Elements Communication Checklist – Adapted *

How well does the learner do the following:

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship (includes the following): • Greets and shows interest in patient as a person • Uses words that show care and concern throughout the interview • Uses tone, pace, eye contact, and posture that show care and concern	○	○	○	○	○
B. Opens the Discussion (includes the following): • Allows patient to complete opening statement without interruption • Asks "Is there anything else?" to elicit full set of concerns • Explains and/or negotiates an agenda for the visit	○	○	○	○	○
C. Gathers Information (includes the following): • Begins with patient's story using open-ended questions (e.g."tell me about…") • Clarifies details as necessary with more specific or "yes/no" questions • Summarizes and gives patient opportunity to correct or add information • Transitions effectively to additional questions	○	○	○	○	○
D. Understands the Patient's Perspective (includes the following): • Asks about life events, circumstances, other people that might affect health • Elicits patient's beliefs, concerns, and expectations about illness and treatment • Responds explicitly to patient's statements about ideas and feelings	○	○	○	○	○
E. Shares Information (includes the following): • Assesses patient's understanding of problem and desire for more information • Explains using words that patient can understand • Checks for mutual understanding of treatment plan • Asks if patient has any questions	○	○	○	○	○
F. Reaches Agreement (if new/changed plan) (includes the following): • Includes patient in choices and decisions to the extent s/he desires • Asks about patients ability to follow diagnostic and/or treatment plans • Identifies additional resources as appropriate	○	○	○	○	○
G. Provides Closure (includes the following): • Asks if patient has questions, concerns or other issues • Summarizes / asks patient to summarize plans until next visit • Clarifies follow-up or contact arrangements • Acknowledges patient and closes interview	○	○	○	○	○

*Adapted from Essential Elements: The Communication Checklist, ©Bayer-Fetzer Group on Physician-Patient Communication in Medical Education, May 2001. Published in Rider EA. Interpersonal and Communication Skills. In: Rider EA, Nawotniak RH. *A Practical Guide to Teaching and Assessing the ACGME Core Competencies, 2nd edition.* Marblehead, MA: HCPro, Inc., 2010. Copyright © 2010 HCPro, Inc.

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Published in: Rider EA. Interpersonal and communication skills. In: Rider EA, Nawotniak RH, eds. *A Practical Guide to Teaching and Assessing the ACGME Core Competencies.* 2nd Ed. Marblehead, MA: HCPro, Inc.; 2010.

Appendix C

Gap-Kalamazoo Communcation Skills Assessment Form*

Clinician/Faculty:

How well does the participant do the following:

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship (includes the following): • Greets and shows interest in the patient and patient's family • Uses words that show care and concern throughout the interview • Uses tone, pace, eye contact, and posture that show care and concern • Responds explicitly to patient and family statements about ideas and feelings	○	○	○	○	○
B. Opens the Discussion (includes the following): • Allows patient and family to complete opening statements without interruption • Asks "Is there anything else?" to elicit full set of concerns • Explains and/or negotiates an agenda for the visit	○	○	○	○	○
C. Gathers Information (includes the following): • Addresses patient and family statements using open-ended questions. • Clarifies details as necessary with more specific or "yes/no" questions • Summarizes and gives family opportunity to correct or add information • Transitions effectively to additional questions	○	○	○	○	○
D. Understands the Patient's and Family's Perspective (includes the following): • Asks about life events, circumstances, other people that might affect health • Elicits patient's and family's beliefs, concerns, and expectations about illness and treatment	○	○	○	○	○
E. Shares Information (includes the following): • Assesses patient's and family's understanding of problems and desire for more information • Explains using words that family can understand • Asks if family has any questions	○	○	○	○	○
F. Reaches Agreement (If new/changed plan) (includes the following): • Includes family in choices and decisions to the extent they desire. • Checks for mutual understanding of diagnostic and/or treatment plans • Asks about acceptability of diagnostic and/or treatment plans • Identifies additional resources as appropriate	○	○	○	○	○
G. Provides Closure (includes the following): • Asks if patient and family have questions, concerns or other issues • Summarizes • Clarifies future time when progress will again be discussed • Provides appropriate contact information if interim questions arise • Acknowledges patient and family, and closes interview	○	○	○	○	○

Appendix C continued

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
H. Demonstrates Empathy (includes the following): • Clinician's demeanor is appropriate to the nature of the conversation • Shows compassion and concern • Identifies/labels/validates patient's and family's emotional responses • Responds appropriately to patient and family's emotional cues	○	○	○	○	○

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
I. Communicates Accurate Information (includes the following): • Accurately conveys the relative seriousness of patient's condition. • Took other participating clinician's input into account. • Clearly conveys expected disease course. • Clearly presents and explains options for future care. • Gives enough clear information to empower decision making.	○	○	○	○	○

What did this clinician do the best at? (Please pick three choices)

- ❑ **Builds a Relationship**
- ❑ **Opens the Discussion**
- ❑ **Gathers Information**
- ❑ **Understands the Patient's and Family's Perspective**
- ❑ **Shares Information**
- ❑ **Reaches Agreement**
- ❑ **Provides Closure**
- ❑ **Demonstrates Empathy**
- ❑ **Communicates Accurate Information**

Why did you choose those particular answers?

What could this clinician improve on? (Please pick three choices)

- ❑ **Builds a Relationship**
- ❑ **Opens the Discussion**
- ❑ **Gathers Information**
- ❑ **Understands the Patient's and Family's Perspective**
- ❑ **Shares Information**
- ❑ **Reaches Agreement**
- ❑ **Provides Closure**
- ❑ **Demonstrates Empathy**
- ❑ **Communicates Accurate Information**

What could they have done better?

***Adapted from:** Essential Elements: The Communication Checklist, ©Bayer-Fetzer Group on Physician-Patient Communication in Medical Education, May 2001, and from: The Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education. Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement. *Academic Medicine* 2001; 76:390-393.*Contacts:* Elizabeth Rider, MSW, MD - elizabeth_rider@hms.harvard.edu (member, Kalamazoo Consensus Statement Group) and Aaron Calhoun, MD - aaron.calhoun@louisville.edu (PERCS Program)

Published in: Rider EA. Interpersonal and communication skills. In: Rider EA, Nawotniak RH, eds. *A Practical Guide to Teaching and Assessing the ACGME Core Competencies*. 2nd Ed. Marblehead, MA: HCPro, Inc.; 2010.

Appendix D

Gap-Kalamazoo Communcation Skills Assessment Form*
Self Assessment

How well do you feel you did the following:

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship (includes the following): • Greets and shows interest in the patient and patient's family • Uses words that show care and concern throughout the interview • Uses tone, pace, eye contact, and posture that show care and concern • Responds explicitly to patient and family statements about ideas and feelings	○	○	○	○	○
B. Opens the Discussion (includes the following): • Allows patient and family to complete opening statements without interruption • Asks "Is there anything else?" to elicit full set of concerns • Explains and/or negotiates an agenda for the visit	○	○	○	○	○
C. Gathers Information (includes the following): • Addresses patient and family statements using open-ended questions. • Clarifies details as necessary with more specific or "yes/no" questions • Summarizes and gives family opportunity to correct or add information • Transitions effectively to additional questions	○	○	○	○	○
D. Understands the Patient's and Family's Perspective (includes the following): • Asks about life events, circumstances, other people that might affect health • Elicits patient's and family's beliefs, concerns, and expectations about illness and treatment	○	○	○	○	○
E. Shares Information (includes the following): • Assesses patient's and family's understanding of problems and desire for more information • Explains using words that family can understand • Asks if family has any questions	○	○	○	○	○
F. Reaches Agreement (If new/changed plan) (includes the following): • Includes family in choices and decisions to the extent they desire. • Checks for mutual understanding of diagnostic and/or treatment plans • Asks about acceptability of diagnostic and/or treatment plans • Identifies additional resources as appropriate	○	○	○	○	○
G. Provides Closure (includes the following): • Asks if patient and family have questions, concerns or other issues • Summarizes • Clarifies future time when progress will again be discussed • Provides appropriate contact information if interim questions arise • Acknowledges patient and family, and closes interview	○	○	○	○	○

Appendix D continued

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
H. Demonstrates Empathy (includes the following): • Clinician's demeanor is appropriate to the nature of the conversation • Shows compassion and concern • Identifies/labels/validates patient's and family's emotional responses • Responds appropriately to patient and family's emotional cues	○	○	○	○	○

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
I. Communicates Accurate Information (includes the following): • Accurately conveys the relative seriousness of patient's condition. • Took other participating clinician's input into account. • Clearly conveys expected disease course. • Clearly presents and explains options for future care. • Gives enough clear information to empower decision making.	○	○	○	○	○

What did this clinician do the best at? (Please pick three choices)

- ☐ **Builds a Relationship**
- ☐ **Opens the Discussion**
- ☐ **Gathers Information**
- ☐ **Understands the Patient's and Family's Perspective**
- ☐ **Shares Information**
- ☐ **Reaches Agreement**
- ☐ **Provides Closure**
- ☐ **Demonstrates Empathy**
- ☐ **Communicates Accurate Information**

Why did you choose those particular answers?

What could this clinician improve on? (Please pick three choices)

- ☐ **Builds a Relationship**
- ☐ **Opens the Discussion**
- ☐ **Gathers Information**
- ☐ **Understands the Patient's and Family's Perspective**
- ☐ **Shares Information**
- ☐ **Reaches Agreement**
- ☐ **Provides Closure**
- ☐ **Demonstrates Empathy**
- ☐ **Communicates Accurate Information**

What could they have done better?

***Adapted from:** Essential Elements: The Communication Checklist, ©Bayer-Fetzer Group on Physician-Patient Communication in Medical Education, May 2001, and from: The Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education. Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement. *Academic Medicine* 2001; 76:390-393. *Contacts:* Elizabeth Rider, MSW, MD - elizabeth_rider@hms.harvard.edu (member, Kalamazoo Consensus Statement Group) and Aaron Calhoun, MD - aaron.calhoun@louisville.edu (PERCS Program)

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Appendix E

Gap-Kalamazoo Communcation Skills Assessment Form*
Parent/Family:

How well did your child's doctor do at…

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship: • The doctor was really interested in my family. • The doctor's words showed that he/she cared for my child. • The doctor seemed to care about our feeling and what we wanted. • The doctor's body language showed that he/she cared for my child.	○	○	○	○	○
B. Opens the Discussion: • The doctor let us finish things we had to say without interrupting. • The doctor asked us about other things that might be worrying us. • The doctor clearly explained why we were meeting.	○	○	○	○	○
C. Gathers Information: • The doctor didn't try to force the conversation with his/her questions. • The doctor asked us for more detail about things that we said. • The doctor would occasionally repeat back what we had said as a summary. • The doctor did not seem to interrupt us as he/she asked their own questions.	○	○	○	○	○
D. Understands the Patient's and Family's Perspective: • The doctor asked about parts of our lives and personal histories that would affect health. • The doctor showed interest in our personal beliefs and concerns. • The doctor asked what we thought about the treatments and tests being done.	○	○	○	○	○
E. Shares Information: • The doctor asked what we understood about our child's illness. • We understood the words our doctor used to describe our child's illness. • The doctor would check to see if we had any questions after each explanation. • The doctor gave us enough time to think about what he/she had said before moving on.	○	○	○	○	○
F. Reaches Agreement: • The doctor included us in all the decisions that were being made. • The doctor made sure that we understood what the next step would involve. • The doctor asked what our feelings were about those plans before making any decisions. • The doctor brought in outside help when we needed it. (Social Work, Pastor)	○	○	○	○	○
G. Provides Closure: • The doctor made sure that we had no more questions before leaving. • The doctor gave a summary at the end of what we had talked about. • The doctor set a time to meet again • The doctor told us who to call if we had more questions. • The doctor showed a real interest in our family as people as he/she ended the meeting.	○	○	○	○	○

Appendix E continued

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
H. Demonstrates Empathy: • The doctor showed compassion for our family • The doctor seemed to understand how we were feeling. • The doctor responded to how we felt in a way that made sense to us.	○	○	○	○	○

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
I. Communicates Accurate Information: • The doctor clearly explained our child's condition • The doctor clearly explained what our options were • The explanations our doctor gave were good enough for us to make important decisions.	○	○	○	○	○

What did this doctor do the best at? (Please pick three choices)

- ❑ **Builds a Relationship**
- ❑ **Opens the Discussion**
- ❑ **Gathers Information**
- ❑ **Understands the Patient's and Family's Perspective**
- ❑ **Shares Information**
- ❑ **Reaches Agreement**
- ❑ **Provides Closure**
- ❑ **Demonstrates Empathy**
- ❑ **Communicates Accurate Information**

Why did you choose those particular answers?

What could this doctor improve on? (Please pick three choices)

- ❑ **Builds a Relationship**
- ❑ **Opens the Discussion**
- ❑ **Gathers Information**
- ❑ **Understands the Patient's and Family's Perspective**
- ❑ **Shares Information**
- ❑ **Reaches Agreement**
- ❑ **Provides Closure**
- ❑ **Demonstrates Empathy**
- ❑ **Communicates Accurate Information**

What could they have done better?

*__Adapted from:__ Essential Elements: The Communication Checklist, ©Bayer-Fetzer Group on Physician-Patient Communication in Medical Education, May 2001, and from: The Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education. Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement. *Academic Medicine* 2001; 76:390-393. *Contacts:* Elizabeth Rider, MSW, MD - elizabeth_rider@hms.harvard.edu (member, Kalamazoo Consensus Statement Group) and Aaron Calhoun, MD - aaron.calhoun@louisville.edu (PERCS Program)

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Appendix F

Informed Consent

UNIVERSITY OF SOUTH DAKOTA
Institutional Review Board
Informed Consent Statement

Title of Project:	Assessing Interpersonal Communication in Dental Hygiene Students Providing Geriatric Care
Principal Investigator:	Lasandra Wilson, RDH, BSDH, MSDH(c) East Hall 116A, Dental Hygiene, Vermillion, SD 57069 (605) 281-1214 lasandra.wilson@usd.edu
Other Investigators:	Ann O'Kelley Wetmore, RDH, MSDH EWU Dental Hygiene, Spokane WA (509) 828-1321

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be actively enrolled in the first or second year of the dental hygiene program at the University of South Dakota (USD). All dental hygiene students are eligible to participate in the study and will not be excluded based on their gender, age, or ethnic identity. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why are we doing it?

The purpose of the study is to provide an educational module to assist in the development of communication skills between dental hygiene students and the geriatric population. Upon completion of the educational module, this study will use a standardized rubric to determine if there is a difference between how patients assess students, how faculty assess students, and how students assess themselves. With my study, I hope to provide you with insights on current research regarding communication that will provide you with confidence while communicating with the geriatric population. This research will also help discover what type of assessment is most helpful to a students' learning and may aid dental hygiene programs in their development of effective curricula and assessment methods. About 64 people will take part in this research.

What will happen if you take part in this study?

If you agree to take part in this study, you will be asked to complete a pre-test, two post-tests, two self-assessment surveys, and record two separate conversations with geriatric patients in the clinic setting. South Dakota State law provides that private conversations may not be recorded, intercepted, or divulged without the consent of at least one of the

individuals involved. The pre and post-tests will be administered in class and will take no longer than 10 minutes to complete. The self-assessment surveys will be completed outside of class time and may take up to 20 minutes. A portion of the self-assessment surveys will include open-ended questions to encourage self-reflection on your communication skills. You will have until Midterm of the Spring 2021 semester to record two conversations and complete the self-assessment surveys.

What risks might result from being in this study?

There are some risks you might experience from being in this study. They are information risks that involve breach of confidentiality. To minimize these risks, audio recordings will be uploaded to a password protected learning management system and all data will be transferred to a thumb drive and put in a locked safe during and at the completion of the study.

How could you benefit from this study?

You might benefit from being in this study by developing confidence in communicating with the geriatric population. Others might benefit because this research will help discover what type of assessment is most helpful to a students' learning and may aid dental hygiene programs in their development of effective curricula and assessment methods.

How will we protect your information?

The records of this study will be kept confidential to the extent permitted by law. Any report published with the results of this study will remain confidential and will be disclosed only with your permission or as required by law. To protect your privacy we will not include any information that could identify you. We will protect the confidentiality of the research data by having participants create an identification (ID) number using the first two letters of the birth month and the last four digits of their phone number. All data will be kept on a password protected computer that only the Principal Investigator will have access to. Identifiers will be stored separately from the data collected and will be destroyed after three years per federal law and USD IRB policy.

All patients sign a Consent for Treatment and Release form at the beginning of their appointment which includes being recorded for educational purposes. Patients will be alerted to the usage of the digital recording device prior to recording, and patients will be identified as either "Patient 1" or "Patient 2". Once the patient audio files are uploaded successfully to the D2L website, students will delete the file from the digital recording device.

It is possible that other people may need to see the information we collect about you. These people work for the University of South Dakota, Eastern Washington University, and other agencies as required by law or allowed by federal regulations.

How will we compensate you for being part of the study?

Completion of a patient recording, patient assessment survey, and self-assessment survey will count towards fulfillment of one clinic competency for oral health education. As an

incentive for your full participation, each student who completes all pre and post-tests and two self-assessment surveys will be entered into a raffle for a $50 Amazon gift card. Each additional self-assessment will earn a student another entry into the raffle.

Your Participation in this Study is Voluntary

It is up to you to decide to be in this research study. Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop at any time. Your participation/nonparticipation and performance in the research study will not affect your grade or relationship with me. You do not have to answer any questions you do not want to answer. You are under no obligation to participate in the study and your consent or non-consent to participate will not impact your academic grade or relationship with me.

Contact Information for the Study Team and Questions about the Research

The researchers conducting this study are Lasandra Wilson and Ann O'Kelley Wetmore. You may ask any questions you have now. If you later have questions, concerns, or complaints about the research please contact Lasandra Wilson at lasandra.wilson@usd.edu.

If you have questions regarding your rights as a research subject, you may contact The University of South Dakota- Office of Human Subjects Protection at (605) 658-3743. You may also call this number with problems, complaints, or concerns about the research. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. Keep this copy of this document for your records. If you have any questions about the study later, you can contact the study team using the information provided above.

Appendix G

Demographics Form

Identification Number: _____	**Please write your current age below:** _____
Circle the course you are enrolled in: DHYG 336 DHYG 435	
Please check the appropriate box below	
1. Ethnicity	**2. Primary Spoken Language**
☐ American Indian or Alaska Native	☐ Arabic
☐ Asian or Asian American	☐ Chinese
☐ Black or African American	☐ English
☐ Caucasian	☐ Spanish
☐ Hispanic or Latino	☐ Vietnamese
☐ Native Hawaiian or Pacific Islander	☐ Choose not to respond
☐ Choose not to respond	☐ Other
☐ Other	

Appendix H
Pre-test

Communication with the Geriatric Population **Pre-test**	Please circle the appropriate course: DHYG 336 / DHYG 435 Identification Number: _____				
To what extent do you agree with the following statements:	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
"Verbal communication has the same effect as non-verbal communication."	1	2	3	4	5
"Interrupting patients can have a negative impact on the clinician-patient relationship."	1	2	3	4	5
"The clinical skills I have acquired are more important to my patients than my interpersonal skills."	1	2	3	4	5
"Financial situations affect treatment plan acceptance more than anything else."	1	2	3	4	5
"It is important to communicate in the same way to every patient."	1	2	3	4	5
"Effective communication with my patient will assist with treatment plan acceptance."	1	2	3	4	5
"It is important to involve patients in treatment decisions."	1	2	3	4	5
"Summarizing treatment details and answering questions increases the likelihood of patient understanding."	1	2	3	4	5
"Using empathy statements is time consuming."	1	2	3	4	5
"Clear, accurate and effective communication is an essential skill for successful dental hygiene treatment."	1	2	3	4	5
"I am confident in my abilities to communicate with the geriatric population."	1	2	3	4	5
Please rate the following criteria:	***Poor***	***Fair***	***Good***	***Very Good***	***Excellent***
How would you rate your communication skills as a clinician?	1	2	3	4	5
Rate your knowledge of patient communication in the clinician-patient relationship.	1	2	3	4	5

Appendix I
First Post-test

Communication with the Geriatric Population **Post-test**	Please circle the appropriate course: DHYG 336 / DHYG 435 Identification Number: _____				
To what extent do you agree with the following statements:	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
"Verbal communication has the same effect as non-verbal communication."	1	2	3	4	5
"Interrupting patients can have a negative impact on the clinician-patient relationship."	1	2	3	4	5
"The clinical skills I have acquired are more important to my patients than my interpersonal skills."	1	2	3	4	5
"Financial situations affect treatment plan acceptance more than anything else."	1	2	3	4	5
"It is important to communicate in the same way to every patient."	1	2	3	4	5
"Effective communication with my patient will assist with treatment plan acceptance."	1	2	3	4	5
"It is important to involve patients in treatment decisions."	1	2	3	4	5
"Summarizing treatment details and answering questions increases the likelihood of patient understanding."	1	2	3	4	5
"Using empathy statements is time consuming."	1	2	3	4	5
"Clear, accurate and effective communication is an essential skill for successful dental hygiene treatment."	1	2	3	4	5
"I am confident in my abilities to communicate with the geriatric population."	1	2	3	4	5
Please rate the following criteria:	***Poor***	***Fair***	***Good***	***Very Good***	***Excellent***
How would you rate your communication skills as a clinician?	1	2	3	4	5
Rate your knowledge of patient communication in the clinician-patient relationship.	1	2	3	4	5
What is a key point you learned today?					

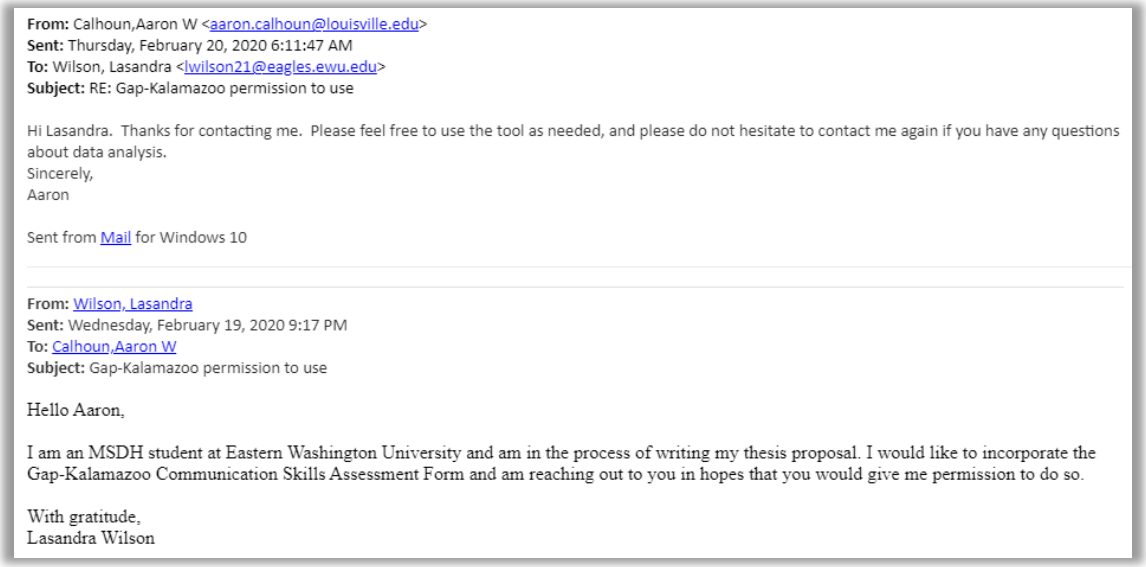
Appendix J
Second Post-test

Communication with the Geriatric Population **Post-test: After Patient Interaction**	Please circle the appropriate course: DHYG 336 / DHYG 435 Identification Number: _____				
To what extent do you agree with the following statements:	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
"Verbal communication has the same effect as non-verbal communication."	1	2	3	4	5
"Interrupting patients can have a negative impact on the clinician-patient relationship."	1	2	3	4	5
"The clinical skills I have acquired are more important to my patients than my interpersonal skills."	1	2	3	4	5
"Financial situations affect treatment plan acceptance more than anything else."	1	2	3	4	5
"It is important to communicate in the same way to every patient."	1	2	3	4	5
"Effective communication with my patient will assist with treatment plan acceptance."	1	2	3	4	5
"It is important to involve patients in treatment decisions."	1	2	3	4	5
"Summarizing treatment details and answering questions increases the likelihood of patient understanding."	1	2	3	4	5
"Using empathy statements is time consuming."	1	2	3	4	5
"Clear, accurate and effective communication is an essential skill for successful dental hygiene treatment."	1	2	3	4	5
"I am confident in my abilities to communicate with the geriatric population."	1	2	3	4	5
Please rate the following criteria:	***Poor***	***Fair***	***Good***	***Very Good***	***Excellent***
How would you rate your communication skills as a clinician?	1	2	3	4	5
Rate your knowledge of patient communication in the clinician-patient relationship.	1	2	3	4	5

Appendix K

Permission Email to use Gap-Kalamazoo Communication Skills Assessment Form:

Granted from Aaron W. Calhoun



From: Calhoun,Aaron W <aaron.calhoun@louisville.edu>
Sent: Thursday, February 20, 2020 6:11:47 AM
To: Wilson, Lasandra <lwilson21@eagles.ewu.edu>
Subject: RE: Gap-Kalamazoo permission to use

Hi Lasandra. Thanks for contacting me. Please feel free to use the tool as needed, and please do not hesitate to contact me again if you have any questions about data analysis.
Sincerely,
Aaron

Sent from Mail for Windows 10

From: Wilson, Lasandra
Sent: Wednesday, February 19, 2020 9:17 PM
To: Calhoun,Aaron W
Subject: Gap-Kalamazoo permission to use

Hello Aaron,

I am an MSDH student at Eastern Washington University and am in the process of writing my thesis proposal. I would like to incorporate the Gap-Kalamazoo Communication Skills Assessment Form and am reaching out to you in hopes that you would give me permission to do so.

With gratitude,
Lasandra Wilson

Appendix L

Modified Gap-Kalamazoo (Faculty Assessment)

Gap-Kalamazoo Communication Skills Assessment Form-Adapted to Dental Hygiene (GKCSAF-DH)*

Faculty:

How well does the participant do the following:

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship: • Greets and shows interest in the patient. • Uses words that show care and concern throughout the conversation. • Uses tone, pace, eye contact, and posture that show care and concern. • Responds explicitly to patient statements about ideas and feelings.	○	○	○	○	○
B. Opens the Discussion: • Allows patient to complete opening statements without interruption. • Asks "Is there anything else?" to elicit full set of concerns. • Explains and/or negotiates an agenda for the visit.	○	○	○	○	○
C. Gathers Information: • Addresses patient statements using open-ended questions. • Clarifies details as necessary with more specific or "yes/no" questions. • Summarizes and gives patient opportunity to correct or add information. • Transitions effectively to additional questions.	○	○	○	○	○
D. Understands the Patient's Perspective: • Asks about life events, circumstances, other people that might affect health. • Elicits patient's beliefs, concerns, and expectations about diagnosis and treatment.	○	○	○	○	○
	1	**2**	**3**	**4**	**5**

E. Shares Information:	**Poor**	**Fair**	**Good**	**Very Good**	**Excellent**
• Assesses patient's understanding of problems and desire for more information. • Explains using words that patient can understand. • Asks if patient has any questions.	○	○	○	○	○

F. Reaches Agreement:	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Includes patient in choices and decisions to the extent they desire. • Checks for mutual understanding of diagnostic and/or treatment plans. • Asks about acceptability of diagnostic and/or treatment plans. • Identifies additional resources as appropriate.	○	○	○	○	○

G. Provides Closure:	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Asks if patient has questions, concerns or other issues. • Summarizes. • Recommends timeframe for patient's next visit. • Acknowledges patient and closes conversation.	○	○	○	○	○

H. Demonstrates Empathy:	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Clinician's demeanor is appropriate to the nature of the conversation. • Shows compassion and concern. • Identifies/labels/validates patient's emotional responses. • Responds appropriately to patient's emotional cues.	○	○	○	○	○

I. Communicates Accurate Information:	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Accurately conveys the relative seriousness of patient's condition. • Took other participating clinician's input into account. • Clearly conveys expected disease course. • Clearly presents and explains options for future care. • Gives enough clear information to empower decision making.	○	○	○	○	○

What did this clinician do the best at? (Please pick three choices)
☐ **Builds a Relationship**
☐ **Opens the Discussion**
☐ **Gathers Information**
☐ **Understands the Patient's and Family's Perspective**
☐ **Shares Information**
☐ **Reaches Agreement**
☐ **Provides Closure**
☐ **Demonstrates Empathy**
☐ **Communicates Accurate Information**

Why did you choose those particular answers?

_____
_____
_____
_____
_____

What could this clinician improve on? (Please pick three choices)
☐ **Builds a Relationship**
☐ **Opens the Discussion**
☐ **Gathers Information**
☐ **Understands the Patient's and Family's Perspective**
☐ **Shares Information**
☐ **Reaches Agreement**
☐ **Provides Closure**
☐ **Demonstrates Empathy**
☐ **Communicates Accurate Information**

What could they have done better?

_____
_____
_____
_____
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*__Adapted from:__ Gap–Kalamazoo Communication Skills Assessment Form (Version: Clinician/Faculty). Permission granted by author Aaron W. Calhoun.

Appendix M

Modified Gap-Kalamazoo (Patient Assessment)

Gap-Kalamazoo Communication Skills Assessment Form-Adapted to Dental Hygiene (GKCSAF-DH)*

Patient:

How well did the dental hygiene student do at…

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship (includes the following): • The student was really interested in me. • The student's words showed that he/she cared for me. • The student seemed to care about my feelings and what I wanted. • The student's body language showed that he/she cared for me.	○	○	○	○	○
B. Opens the Discussion (includes the following): • The student let me finish things I had to say without interrupting. • The student asked me about other things that might be worrying me. • The student clearly explained what the appointment would include.	○	○	○	○	○
C. Gathers Information (includes the following): • The student didn't try to force the conversation with his/her questions. • The student asked me for more detail about things that I said. • The student would occasionally repeat back what I had said as a summary. • The student did not seem to interrupt me as he/she asked their own questions.	○	○	○	○	○
D. Understands the Patient's Perspective (includes the following): • The student asked about parts of my life and personal history that would affect health. • The student showed interest in my personal beliefs and concerns.	○	○	○	○	○

- The student asked what I thought about the diagnosis and treatment.

E. Shares Information (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• The student asked what I understood about my condition. • I understood the words the student used to describe my condition. • The student would check to see if I had any questions after each explanation. • The student gave me enough time to think about what he/she had said before moving on.	○	○	○	○	○

F. Reaches Agreement (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• The student included me in all the decisions that were being made. • The student made sure that I understood what the next step would involve. • The student asked what my feelings were about the plans before making any decisions. • The student brought in outside help when needed. (clinical instructor)	○	○	○	○	○

G. Provides Closure (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• The student made sure that I had no more questions. • The student gave a summary at the end of what we had talked about. • The student recommended a timeframe for my next visit. • The student showed a real interest in me as a person as he/she ended the conversation.	○	○	○	○	○

H. Demonstrates Empathy (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• The student showed compassion for me. • The student seemed to understand how I was feeling. • The student responded to how I felt in a way that made sense to me.	○	○	○	○	○

I. Communicates Accurate Information (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• The student clearly explained my condition. • The student clearly explained what my options were.	○	○	○	○	○

- The explanations the student gave were good enough for me to make important decisions.

What did this student do the best at? (Please pick three choices)
☐ **Builds a Relationship**
☐ **Opens the Discussion**
☐ **Gathers Information**
☐ **Understands the Patient's and Family's Perspective**
☐ **Shares Information**
☐ **Reaches Agreement**
☐ **Provides Closure**
☐ **Demonstrates Empathy**
☐ **Communicates Accurate Information**

Why did you choose those particular answers?

_____
_____
_____
_____
_____

What could this student improve on? (Please pick three choices)
☐ **Builds a Relationship**
☐ **Opens the Discussion**
☐ **Gathers Information**
☐ **Understands the Patient's and Family's Perspective**
☐ **Shares Information**
☐ **Reaches Agreement**
☐ **Provides Closure**
☐ **Demonstrates Empathy**
☐ **Communicates Accurate Information**

What could they have done better?

_____
_____
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_____

*__Adapted from:__ Gap–Kalamazoo Communication Skills Assessment Form (Version: Patient/Family). Permission granted by author Aaron W. Calhoun.

Appendix N

Modified Gap-Kalamazoo (Self-Assessment)

Gap-Kalamazoo Communication Skills Assessment Form-Adapted to Dental Hygiene (GKCSAF-DH)*

Self-Assessment:

How well do you feel you did the following:

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Builds a Relationship (includes the following): • Greets and shows interest in the patient. • Uses words that show care and concern throughout the conversation. • Uses tone, pace, eye contact, and posture that show care and concern. • Responds explicitly to patient statements about ideas and feelings.	○	○	○	○	○
B. Opens the Discussion (includes the following): • Allows patient to complete opening statements without interruption. • Asks "Is there anything else?" to elicit full set of concerns. • Explains and/or negotiates an agenda for the visit.	○	○	○	○	○
C. Gathers Information (includes the following): • Addresses patient statements using open-ended questions. • Clarifies details as necessary with more specific or "yes/no" questions. • Summarizes and gives patient opportunity to correct or add information. • Transitions effectively to additional questions.	○	○	○	○	○
D. Understands the Patient's Perspective (includes the following): • Asks about life events, circumstances, other people that might affect health. • Elicits patient's beliefs, concerns, and expectations about diagnosis and treatment.	○	○	○	○	○
E. Shares Information (includes the following):	1 Poor	2 Fair	3 Good	4	5 Excellent

• Assesses patient's understanding of problems and desire for more information. • Explains using words that patient can understand. • Asks if patient has any questions.	○	○	○	**Very Good** ○	○
F. Reaches Agreement (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Includes patient in choices and decisions to the extent they desire. • Checks for mutual understanding of diagnostic and/or treatment plans. • Asks about acceptability of diagnostic and/or treatment plans. • Identifies additional resources as appropriate.	○	○	○	○	○
G. Provides Closure (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Asks if patient has questions, concerns or other issues. • Summarizes. • Recommends timeframe for patient's next visit. • Acknowledges patient and closes conversation.	○	○	○	○	○
H. Demonstrates Empathy (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Clinician's demeanor is appropriate to the nature of the conversation. • Shows compassion and concern. • Identifies/labels/validates patient's emotional responses. • Responds appropriately to patient's emotional cues.	○	○	○	○	○
I. Communicates Accurate Information (includes the following):	**1 Poor**	**2 Fair**	**3 Good**	**4 Very Good**	**5 Excellent**
• Accurately conveys the relative seriousness of patient's condition. • Took other participating clinician's input into account. • Clearly conveys expected disease course. • Clearly presents and explains options for future care. • Gives enough clear information to empower decision making.	○	○	○	○	○

What did you do the best at? (Please pick three choices)

☐ **Builds a Relationship**
☐ **Opens the Discussion**
☐ **Gathers Information**
☐ **Understands the Patient's and Family's Perspective**
☐ **Shares Information**
☐ **Reaches Agreement**
☐ **Provides Closure**
☐ **Demonstrates Empathy**
☐ **Communicates Accurate Information**

Why did you choose those particular answers?

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_____

What could you improve on? (Please pick three choices)

☐ **Builds a Relationship**
☐ **Opens the Discussion**
☐ **Gathers Information**
☐ **Understands the Patient's and Family's Perspective**
☐ **Shares Information**
☐ **Reaches Agreement**
☐ **Provides Closure**
☐ **Demonstrates Empathy**
☐ **Communicates Accurate Information**

What could you have done better?

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_____
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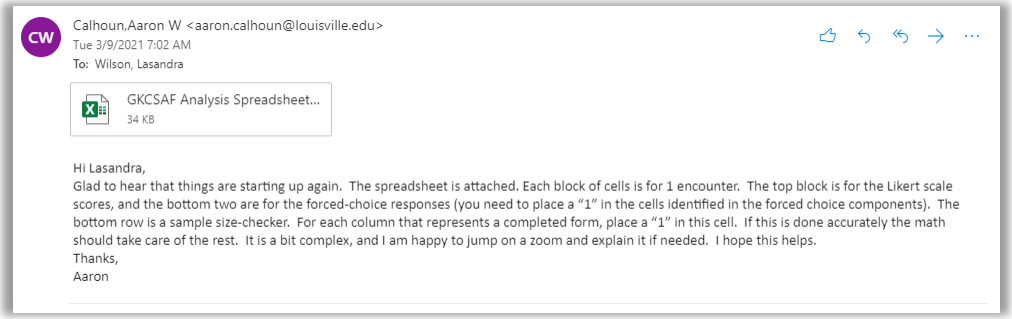
_____

*__Adapted from:__ Gap–Kalamazoo Communication Skills Assessment Form (Version: Self-Assessment). Permission granted by author Aaron W. Calhoun.

Appendix O

Permission Email to Gain Access to GKCSAF Analysis Spreadsheet:

Granted by Aaron W. Calhoun



CW

Calhoun,Aaron W <aaron.calhoun@louisville.edu>
Tue 3/9/2021 7:02 AM
To: Wilson, Lasandra

GKCSAF Analysis Spreadsheet...
34 KB

Hi Lasandra,
Glad to hear that things are starting up again. The spreadsheet is attached. Each block of cells is for 1 encounter. The top block is for the Likert scale scores, and the bottom two are for the forced-choice responses (you need to place a "1" in the cells identified in the forced choice components). The bottom row is a sample size-checker. For each column that represents a completed form, place a "1" in this cell. If this is done accurately the math should take care of the rest. It is a bit complex, and I am happy to jump on a zoom and explain it if needed. I hope this helps.
Thanks,
Aaron

Curriculum Vita

Lasandra Wilson, RDH, BSDH, MSDH(c)
1005 West Sterling Oak Drive • Sioux Falls, SD 57108 • (605) 281-1214 •
lasandra.c.wilson@gmail.com

EDUCATION

Master of Science, **Dental Hygiene** — Anticipated May 2021
Eastern Washington University – Spokane, WA

Bachelor of Science, **Dental Hygiene** — May 2013
University of South Dakota - Vermillion, SD

Associate of Applied Science, **Dental Technology** — May 2008
Kirkwood Community College - Cedar Rapids, IA

EMPLOYMENT

Junior Clinic Coordinator — January 2020 – Present
Department of Dental Hygiene
University of South Dakota – Vermillion, SD

Instructor — August 2017 – Present
Department of Dental Hygiene
University of South Dakota – Vermillion, SD

Registered Dental Hygienist

Sensational Smiles – Sioux Falls, SD — December 2013 - Present
Karmazin Dental – Sioux Falls, SD — June 2020 - Present
Today's Family Dentistry – Brandon, SD — October 2013 - 2019
Prairie Dental Center – Sioux Falls, SD — June – December 2013
Dental Care Associates – Sioux Falls, SD — June – December 2013
Dr. Dwight Loudon PC – Sioux Falls, SD — June – December 2013

Dental Assistant and Lab Technician — December 2008 – June 2013
Prairie Dental Center - Sioux Falls, SD

Dental Lab Technician — May 2008 – December 2008
Chris Dental Studio - Sioux Falls, SD

CURRENT LICENSES AND CERTIFICATIONS

- Registered Dental Hygienist, South Dakota
- Local Anesthesia Administration
- Nitrous Oxide/Oxygen Sedation
- CPR and AED for the Professional Rescuer

CONFERENCE PRESENTATIONS

- SDDA/SDDHA Annual Conference
  "Alcoholism and Oral Health" (May,2012)
- School of Health Sciences Research Conference
  "Alcoholism and Oral Health" (April, 2012)

HONORS AND AWARDS

- Dr. Peter R. Thraen Department Service Award (April, 2013)
- The Outstanding Junior Dental Hygiene Student (April, 2012)
- The University of South Dakota Dental Hygiene Public Health Service Scholarship (April, 2012)

LEADERSHIP

- American Dental Hygienists' Association – Active Member since 2013
- South Dakota Disaster Preparedness Training – Vermillion, SD (February, 2013)
- Inter-professional Training Workshop – Vermillion, SD (February, 2013)

COMMUNITY INVOLVEMENT

- Health and Healing event, Church on the Street – Sioux Falls, SD
- Sioux Empire Smiles – Sioux Falls, SD
- Feeding South Dakota Food Drive – Sioux Falls, SD
- Halloween Candy Buy Back & Toothbrush Drive for our Troops – Sioux Falls, SD
- American Diabetes Association Tour de Cure – Sioux Falls, SD
- Junior Achievement Bowl-a-Thon – Sioux Falls, SD
- Susan G. Komen Race for the Cure – Sioux Falls, SD
- Oral Cancer Screenings at Health Fairs – Vermillion, SD
- Iowa Mission of Mercy – Sioux City, IA