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Analysis of Interprofessional Education Inclusion Within U.S. Dental Hygiene Programs' Curricula

By

Jennifer M. Pacheco

BSDH, Dental Hygiene, The University of New Mexico, 2021

THESIS

Submitted in Partial Fulfillment of the

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Dedication

I would like to thank the Lord for giving me the ability, strength, and perseverance in completing my goal. He is the only reason that I succeeded in this journey. To my loved ones that are no longer here, thank you for inspiring me to fulfill my purpose in life. This is for you. Mom and dad for encouraging me to continue with my education. Gus, and our baby boys Lenny, Otis, and Ozzy thank you for keeping me company while I worked on my project and pushing me towards the finish line. You all keep me going. And my dear friend Rachel, who gave me the opportunity that would lead me to writing this thesis paper. Thank you.

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Abstract

The purpose of this study was to collect information on the implementation of IPE activities within U.S. dental hygiene programs and whether program faculty are implementing these components into their program curricula. Furthermore, the study would identify which types of IPE activities were being conducted and if these activities met the CODA standards. An original survey was sent out to dental hygiene program directors and faculty. Results revealed both programs agreed that IPE is a significant component to include in hygiene curricula to better equip students as members of the healthcare team to deliver comprehensive care. IPE activities implemented were consistently the same with most following CODA standards. Findings from this study suggests entry level programs are implementing a minimum of IPE initiatives into their curricula. Although time was a common barrier for all programs, a gradual increase of IPE implementation can be seen in most programs.

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Chapter I. Introduction

Introduction

The connection between oral and systemic health are irrefutably related. With more dental professionals taking on expanded roles in the healthcare system, dental professions are obligated to enhance their collaborative skills to work interdependently with other members of a healthcare team. As the dynamics of the healthcare system evolve, so must the education of dental hygiene students. Interprofessional education (IPE) allows students to expand on their experience and their roles in the collaborative work setting. IPE helps students stay current with the changing and complex oral care needs of their patients. Equally important, it improves the quality of patient care.

Although the dental hygiene curriculum is intense and builds on the students' knowledge of theory and clinical skills, the inclusion of IPE within the hygiene curriculum should strengthen and prepare the dental hygiene student to work as a critical member of an integrated team. Incorporating IPE into the dental hygiene curriculums is a critical component in addressing the nation's oral health. By including IPE early on in students' education, students will graduate having a strong knowledge of the responsibilities and functions of each healthcare profession. More importantly, they develop a mutual respect for each other's work and understand how each member's contribution impacts patient care.

Currently, research indicates dental hygiene programs are incorporating none or only the minimum IPE activities into their curriculums; this is not sufficient to change the lack of integration that dental hygiene professionals play in the oral-systemic link. Research has

shown that historically, many health science faculties were trained prior to the emergence of IPE and were acclimated to working in a uni-professional setting making it challenging to adopt a team-based approach into their teaching.[1] A review of the current educational model of dental hygiene curriculums needs to be conducted. Upon review, dental hygiene programs can make the necessary modifications so that their programs can implement IPE while making advancements towards resolving America's oral health crisis. There are several hurdles with integrating IPE initiatives into curriculums, but the benefits of IPE are evident.

Statement of the Problem

What type of programs are involved in IPE? Are these programs providing support to both faculty and students during IPE experiences? To what extent does program curriculum include IPE initiatives? Which types of IPE initiatives do program participates in? Do faculty participate in yearly IPE initiatives? Moreover, do faculty and staff support and encourage their students to work in diversified environments? Upon graduation, are students equipped to effectively work in an interprofessional setting?

Significance of the Problem

Interprofessional education (IPE) has been proposed as a viable solution to meet the current demands, as its intent is to promote effective communication, foster teamwork, improve health outcomes, and increase one's appreciation and understanding of other health care professionals.[1] IPE is essential to preparing a competent workforce to address the oral health of the nation. While many entry level dental hygiene programs across the country focus on preparing students for the national boards, dental hygiene programs in general,

should consider revising the curriculum to include IPE. Students who are educated in the interprofessional learning model should be able to collaborate with other members of the integrated team and be competent in providing patients with innovative care. As a result of increased student abilities, a higher quality of care will be delivered to patients, heightening health outcomes and overall well-being.[1] This is because IPE allows students to interact and familiarize themselves with the roles of other healthcare members of the team and contribute their area of expertise to create personalized treatment plans that address the patient's overall healthcare needs.

Lastly, IPE can assist with advancing the dental hygiene profession and establishing them as primary contributors to patient care.[1] By being well rounded in both theory and clinical skills, students who have learned about IPE and graduate from programs that focus on IPE can easily and effectively work in non-traditional workplace settings. They can take a lead role in teaching other healthcare professionals about the correlation and connection between oral and systemic health. Because many healthcare professions are not aware of the roles of their dental counterparts or even know how vital their roles are within the medical aspect of a patient's treatment, IPE will allow dental hygiene professionals to use these opportunities to educate and define the importance oral care is to the patient's systemic health to other professionals and to the public.

Operational Definitions:

Interprofessional education (IPE) –Two or more students of healthcare professions learn about and understand each other's role and contribution towards promoting and encourage collaborative patient care.

Interprofessional collaboration (IPC) -Healthcare professionals from various healthcare backgrounds working together to provide comprehensive treatment care.

Collaborative-Working together for the benefit of others or for a plan or goal.

Integrated team-Healthcare team made up of various healthcare professions who work closely to provide comprehensive treatment for the same patient.

Curriculum-Sequence of courses or content that is essential for learning and teaching for students to achieve proficiency in a specific area.

Integrated work setting- Place of employment that allows various healthcare professionals to collaborate and discuss specialized treatment for the patient.

Interprofessional Education Experiences-Opportunities offered at learning institutions that enable students from two or more healthcare professions to collaborate and contribute their area of expertise to treat patients comprehensively.

Chapter II. Review of Literature

Introduction

The following literature review is intended to explore IPE in dental hygiene curriculums. Furthermore, it will examine the attitudes and behaviors of dental hygienists' on interprofessional education and collaboration, attitudes, and practices of dental hygiene faculty, including program directors and the role that IPE has in their current curriculum, and the incorporation of interprofessional education into program curriculums. The PubMed search engine was utilized to access the MEDLINE database. The following key terms were used: interprofessional education, IPE in dental hygiene, integration of interprofessional education, dental hygiene education in the U.S.

IPE Defined

Currently, treatment of patients is becoming more complex. With the increased patient populations now presenting with chronic health conditions, a provider working alone is no longer sufficient to address these patient's needs. Health care providers are now required to collaborate with other health care providers, with the health care systems, many times referred to as interprofessional care. Specifically, IPE teaches students to work in conjunction with other healthcare professionals to treat patients thoroughly and comprehensively. In general, the term IPE, is defined as two or more different health professional students jointly learning about and understanding each other's role and contribution towards promoting and encouraging collaborative patient care. However,

Formicola et. al defines IPE as a term used to describe the recent movement to break down professional barriers that can inhibit the easy flow of prevention and management of disease for individual patients and population groups.[3]

IPE in Dental Hygiene Curriculums

As healthcare evolves, many academic institutions are now taking strides towards improving and revising their curricula to enable their students to improve the quality of treatment they provide to their patients, by implementing IPE into their programs.[3] In fact Formicola et al, have noted that healthcare profession programs along with academic health centers, are being prompted to integrate joint learning opportunities into their programs so that students can develop a profound understanding of how the responsibilities and the roles that other healthcare professions along with teamwork can better serve their patients upon graduation.[3]And with the help of the Interprofessional Education Collaborative Expert Panel (IPEC), dental hygiene institutions throughout the U.S. can now incorporate the four IPE core domains identified by this board that are deemed necessary for all healthcare professions to incorporate into their program curricula.[3]

In 2009, a group consisting of six healthcare leaders from national organizations called the Interprofessional Education Collaborative (IPEC) was formed. Their goal was to assist in preparing healthcare students to work collaboratively to deliver team based patient care and improve population health outcomes.[4] Originally the Interprofessional collaborative practice model was comprised of four domains. The domains are Competency 1-Values and Ethics, Competency 2-Roles and Responsibilities, Competency 3-Interprofessional communication, and Competency 4-Teams and Teamwork. These competencies are used to

assess the effectiveness of IPE activities and promote healthcare teams.[2] But in 2016, after reviewing changes within the healthcare infrastructure, the IPEC board recognized the need to put more emphasis on population health and updated the competency model to reflect these changes.[4] This updated version integrates explicit population health outcomes alongside individual care competencies into an expanded competency model that is needed to achieve today's health system of goals of improved health and health equity across the life span.[4]

Currently this model places Interprofessional Collaboration as the principal domain and arranges the four domains under it along with sub competencies.[4] With the addition of sub-competencies, this helps to further define the four core competencies extensively and offers dental hygiene faculty a clear concept of what IPE is. Similarly, the sub-competencies can be utilized by dental hygiene faculty and administration as a roadmap or guide on how to specifically incorporate IPE activities or experiences into their programs and effectively meet the required standards. Moreover, they offer methods in how it can be demonstrated throughout patient care and amongst team collaborations.

Many accrediting agencies are now mandating learning institutions to format IPE activities for students.[3] One agency requiring the integration of IPE activities into curriculums is the Commission on Dental Accreditation (CODA).[5] Since CODA's mission is to establish, implement, and monitor the standards to improve the quality of education that dental hygiene students obtain from accredited programs, the recent standards which reflect the inclusion of IPE into curriculums cannot be disregarded. The significance of interprofessional education is emphasized with the word "must" included in the accreditation standards for dental hygiene education programs.

Three accreditation standards imply that dental hygienists should provide oral health care in a manner that is harmonious with patient's other health care needs through collaboration with other healthcare providers when necessary.[6] The first CODA Standard, 2-13, states the following, Graduates must be competent in providing the dental hygiene process of care. This can be demonstrated by students providing suitable documentation and using risk appraisals and or forms to design their dental hygiene treatment plans.[5] Competency Standard, 2-15, states, Graduates must be competent in communicating and collaborating with other members of the health care team to support comprehensive patient care.[5] One example of how a dental hygiene program can show that they are following this standard is by hygiene students being able to demonstrate the ability to engage and converse with healthcare providers, groups, or individuals efficiently. A second example is evaluations developed to measure a students' performance and understanding of interdisciplinary teamwork and communication.[5] The third CODA Standard, 2-23, states, Graduates must be competent in problem solving strategies related to comprehensive patient care and management of patients. [5] This can demonstrate a program's compliance by including assignments or activities that requires students to problem solve issues related to complex patient care.[5] Since, the CODA standards are designed for Dental Hygiene Education Programs to graduate competent dental hygiene professionals, one cannot exclude those standards especially those implying IPE.

Dental Hygienists' Attitudes and Experiences on IPE and IPC

A study was conducted to assess the attitudes of dental hygienists past IPE experiences and explore how their experiences influenced IPC collaboration with other

healthcare workers. The study was completed using a 23-item survey instrument that included a variety of multiple-choice questions, 2 open ended items, six Likert style questions, and 2 fill in the blanks. The sample size included 165 licensed dental hygienists who were recruited through constituent websites of the American Dental Hygienists' Association and social media sites.[2] Most of the subjects had graduated from associate degree programs and were mainly employed in private practice settings. Half of them were from Northeastern United States and had 16-25 years of clinical hygiene experience.[2]

In reference to IPE experiences, the frequency of dental hygienists having IPE experiences was highest in the group who had been practicing 0-5 years. This was followed by dental hygienists who worked 6-10 years and trailed by those who worked 16-20 years. The data from this study further revealed that 63% of practicing dental hygienists had collaborated with 1 or more healthcare providers within the last six months. Dental hygienists who had prior IPE experience versus dental hygienists without IPE experiences tended to collaborate with other healthcare care providers more often.[2]

Participants who had experienced IPE in a collaborative setting presented higher positive attitudes towards IPE compared to those without interprofessional experience.[2] In fact, a major correlation suggest that when IPE attitudes increase, attitudes regarding collaboration with other healthcare professionals also increase. Most of these dental hygienists had positive perception on collaborating with other healthcare workers to deliver comprehensive patient treatment and felt confident in working with other healthcare professionals.[2] When asked if they had IPE experiences, 56 answered yes. While the other two thirds had either agreed or strongly agreed that IPE provided them with the confidence needed to collaborate in an interprofessional setting. One of the questions asked, how

confident do you feel collaborating with other healthcare professionals? More than half of the participants ranked themselves as confident when collaborating with other healthcare professionals.[2] Confidence was not the only skill that increased. Sixty one percent felt that communication skills with both patients and other healthcare professionals were increased with their experience with IPE regardless of having IPE experiences during their hygiene education.[2]

Data suggest a positive correlation between respondent's interprofessional collaboration (IPC) attitudes and corresponding IPE attitudes regardless of whether they had IPE in their curriculum.[2] When it came to IPC, 90% of these dental hygienists reported that collaboration between healthcare providers and dental hygienists was important. Fifty-two percent strongly agreed that dental hygienists can be a more effective team member in patient treatment through collaborative care while 63% strongly agreed that patients would benefit greatly if healthcare professionals and dental hygienists worked together.[2]

A quarter of the dental hygienists who participated in the survey felt a lack of perceived need to collaborate with other healthcare professionals.[2] Although this study did not identify if respondents did not see the need for communicating with other healthcare professionals to manage patient care or if they did not value IPC for improved patient outcomes, yet reasons for not collaborating with other healthcare providers were "lack of need", "lack of time", and "not in the job description/not allowed".[2]

Despite the level of experience with IPE and IPC, the study revealed that dental hygienists are enthusiastic and receptive about participating in collaborative teams. They recognize the significance of IPC and act on their attitudes instead of formal training to deliver comprehensive patient care.[2] This was confirmed when dental hygienists were asked

what is the most important factor for a dental hygienist to practice IPC? Over one- third of the participants mentioned that better health outcomes and patient care were the most important factor for IPC followed by respect, and lastly, teamwork and collaboration.[2]

Faculty Attitudes and Values of IPE

Since education plays a critical role in the process of preparing future practitioners to successfully work together, understanding faculty attitudes and values towards IPE is relevant to today's educational model.[7] While multiple levels of academic support are necessary for successful IPE implementation, ultimately it is the individual faculty members providing instruction and modeling positive attitudes towards IPE who will impact its success.[7] Tolle et al, stated the importance of interprofessional collaboration (IPC) and how dental faculty can implement these practices to train dental hygiene students' to be proficient in providing comprehensive patient care.[7]

Tolle sent out a twenty-five-question electronic self-reported survey was sent out to 1,800 faculty from 335 entry level dental hygiene programs in the United States; a total of 449 respondents participated. This survey focused on gathering specific demographic information such as the type of program, program length, faculty appointment and rank, and amount and type of IPE activity.[7] The results were as follows: close to three-quarters of these respondents stated that they were involved in some form of IPE. 30% of respondents reported implementing one hour of instructional methods done within the community, clinic, or classroom setting per week. 14% of faculty did two hours, five percent did three hours, twenty-six percent implemented IPE for four hours per week, and twenty-five percent of the sample size were unaware of the hours that were used for interprofessional

instruction.[7] Additionally, when it came to ranking the four competencies of IPE, the faculty rated ethics first, communication second, roles and responsibilities third, and teams and teamwork were ranked last.[7]

The programs with the highest percentage of IPE inclusion were the bachelor level programs with the highest percentage (90%) of those programs being associated with a dental school. Although there were favorable attitudes towards IPE from both associate and bachelor level programs, faculty from the bachelor's degree programs were more likely to agree with the following statements: 1) interprofessional collaboration assists students to become more proficient healthcare team members, and 2) patients benefit when dental professionals work collaboratively with other healthcare members to problem solve.[7] When asked whether there was room for supplementary IPE requirements in the current curricula, approximately 35% of those from bachelor's degree programs associated with dental schools were uncertain. This could be a result of having too many objectives to meet in their current curricula. Despite time being a common barrier for dental hygiene programs not implementing IPE, half or more of the respondents reported having ample time for IPE instruction.[7] This can infer that if these specific programs have managed to find methods to implement IPE into their curriculums, then all the programs can find strategies to involve this learning model into their current curriculum in some form.

The data implied that although IPE activities are being implemented within these programs through various settings, there is a lack of participation especially within the associate level programs.[7] Concerning the question on whether their programs had personnel and resources to teach IPE courses, the bachelors level programs agreed compared to those of associate level programs. One reason could be that many associate levels programs lack the

manpower and experienced faculty to carry out IPE initiatives. A second reason could be that these programs focus is solely on equipping their students on passing national boards and establishing clinical skills rather than placing importance on building their students' skills on patient care and problem solving in a collaborative setting.

A significant contrast was made between program directors in another study conducted by Ferguson at el, that revealed that 57% of program directors indicated that IPE was significant for the hygiene profession, yet in this study, it indicated that 85% felt that faculty should partake in IPE while 95% of these participants felt that IPE influences decisions concerning patient care.[7] Even though the majority of faculty acknowledging the need for IPE into curriculums much is not being done to incorporate this learning model. With only 30% of programs including one hour of IPE and 26% providing 4 hours or more, is this enough IPE to improve interprofessional collaboration to equip hygiene students with the advanced skills needed to work in an integrated work setting? As for the 25% of the sample size of faculty which didn't know how many hours were implemented in their curriculum, it is possibly an indication that either IPE is not taking place or faculty lack training, experience, and/or knowledge of IPE.[7] Lastly, because ethics was ranked higher than teams and teamwork by faculty as the most important of the IPE components, this can possibly reflect the level of importance that programs are putting towards team collaboration and the critical need for students to refine this skill to deliver complex care.

Faculty and Administrators Perspectives on IPE

The attitudes of dental hygiene administrators and educators towards IPE have not been well documented.[1] In the Casa-Levine study, dental hygiene administrators along with faculty members were sent a 34 question self-reported survey to assess their knowledge and

attitudes about IPE within their hygiene curricula and to determine if their outlook on IPE were dependent of their gender, professional role, experience, and teaching strategies.[1] Out of 224 administrators and faculty members who were invited to participate, only 91 had completed the survey. Most of these participants were females who held the role of faculty member and were in education between 11 to 20 or more years.[1]

The results of the study indicated that participants had a positive perspective on IPE pedagogy and believed that IPE should be a goal of their institution. Amongst the positive aspects of IPE, many believed that health care students obtaining team working skills was paramount.[1] A mean score of 4.22 agreed that students who acquired these skills would be most prepared and effective once they entered an integrated workplace setting.[1] Similar to the Bagge study, respondents also felt that IPE would improve communication with patients as well as other healthcare professionals. Another similarity was identified as in the Tolle study, faculty and administrators felt that student collaboration was essential for them to be able to problem solve.

Participants attitudes were positive when asked if working with other professions was favored. A total of 36% agreed whereas 12% felt negative towards collaborating with other professions.[1] Another factor explored was the subject's knowledge of IPE and how they applied this component to their curricula. Data noted that the link between the faculties attitudes on IPE was strongly associated with their understanding, knowledge, and use of IPE. 58% were knowledgeable about IPE, 38% had minimal knowledge.[1] And 6% of faculty responded that they had extensive knowledge of IPE while only 1% reported no knowledge of IPE.[1]

Moreover, the study identified the phases in which dental programs stood in applying IPE into their curriculums. 48% of faculty and administrators were in the early stages of applying IPE into their dental hygiene curricula, did so because they felt that they can help supporting students in better understanding of clinical issues.[1] While at the same time, only 22% reported that they were at the intermediate stages of applying IPE into their curriculum. 6% had responded that they applied IPE expansively in their curriculums. And still 24% reported not applying this component in their curriculums but felt that that this does not depreciate their course content.[1] But both groups agreed that incorporating IPE into their curricula was burdensome.[1]

Both the program directors and faculty of this study recognized the importance of IPE and how it benefits students and patients alike. Even though the knowledge level varied amongst faculty, most respondents had some knowledge of IPE. This can infer that IPE is not a new concept within dental hygiene faculty. Because of their familiarity to IPE, these informed faculty have an advantage in reviewing their current curricula and modifying it to stay current and simultaneously advance their students' knowledge in collaborative care. For those faculty and program directors who had no knowledge of IPE, are now introduced to this new learning model, and can take the initiative to research IPE and understand the benefits of its application within curriculums. By being informed, program directors and faculty can stay competitive with other healthcare programs already implementing IPE into their curriculums. Furthermore, it can encourage collaborations within dental hygiene programs. Faculty can contact hygiene faculty from other institutions to collaborate on developing meaningful IPE activities or experiences to incorporate into their curricula for their students to prepare them to provide innovative care and be compliant with the

standards. As well as discuss what activities or experiences they have included and what has worked and what hasn't.

Program Director's Perspectives on IPE

In the Ferguson-Inglehart study, program directors from entry level dental hygiene programs were sent recruitment emails with a link to partake in a web -based survey which consisted of both closed- and open- ended questions.[6] The purpose of the survey was to identify their perception of the importance of IPE, assess their compliance in incorporating IPE into current and planned activities as related to the 2014 CODA standards, and lastly how they would assess the outcomes of their efforts.[6] Out of the 322-entry level dental hygiene program directors, only 102 or 30% responded. These programs directors were from 2-year colleges granting associate degrees.

Results of this survey revealed that 58% of the dental hygiene directors felt that IPE on a personal level was important, and 57% felt that it was important to the dental hygiene profession. Yet only 40% felt that IPE was important to their respective academic institutions. [6] And when asked what planned and current IPE clinic- based activities were included based on the CODA standards that imply interprofessional interactions, the following responses were given: volunteer projects, patient treatment at enrichment sites, consults with volunteer dentists and staff in the clinic setting, and external medical consults.[6] Collecting patient data for each student and assessment of student clinical performance by clinical staff were also considered as part of the clinic-based activities. Less mentioned were classroom-based activities which consisted of research presentations and courses on communication.[6]

With regards to assessing IPE outcomes, faculties' evaluation of student's clinical performance was mainly mentioned with a mean score of 25.[6] Another method of assessing outcomes of classroom-based IPE activities were using rubrics with N=16 and reflections with a score of N=9. Surprisingly, over 20% of the participants did not assess IPE related efforts and 5% of them were uncertain if they were assessed.[6] Lastly, when asked how they would be planning IPE activities in the future, thirty-seven program directors considered incorporating mainly clinic-based activities, while thirteen program directors provided no specific plans or course of action and simply responded that they were complying with the CODA standards.[6]

While many of the program directors in this survey felt that IPE is important, many of them noted multiple barriers to implementing IPE into their program curricula. The most common barrier has been time.[6] Program directors also noted inexperienced faculty, the newness of IPE, and lack of cooperation from other staff, support from administration and lack of creating partnerships with other healthcare professions. But one barrier that is of great impact, was that IPE is not specifically noted in the CODA standards.[6] Unlike the Dental Standard 1-9 that specifically requires IPE, dental hygiene's standards only suggest IPE.[6] This causes issues with dental faculty and directors from understanding the importance of IPE and how vital is it to their programs. When staff do not have a clear understanding of what IPE is and what it should look like in their curricula, then many think they are complying when they really aren't. One example was that many staff thought that they were complying with the CODA standards when listing their current, planned and outcome assessments of the IPE activities they were providing, they were in fact not true IPE activities.

IPE Activities in Dental Hygiene Schools

IPE activities mentioned in the literature were consistently the same, with little variation in the type. Ferguson Inglehart's study revealed that the IPE activities being provided were mainly clinic-based activities.[6] The clinical activities that were implemented were treatment of patients at enrichment sites, volunteer projects, outside medical consults, and consults that involved volunteer dentists or staff in the clinic.[6] Supplementary activities mentioned in their study were collecting patient data for each student and faculty assessment of student performance in the clinic. Less emphasis was put on classroom activities. These types of activities included communication courses and research presentations.[6]

True IPE activities, as demonstrated by reflection exercises, community course work, classroom work and participation grade. These are clearly not IPE activities that engage the students in collaborating with other healthcare workers and exchanging their knowledge and skills with other students. Other examples of activities that did not demonstrate IPE activities were in the other activities mentioned in the Ferguson-Inglehart study, were rubrics, developing IPE assessments, compliant, student surveys, projects, reflection exercises, national board scores, and web portfolio.[6] Clinic based were faculty evaluation of students, simulation, consultations, chart audits, student self-assessment, these were more of evaluations or assessments rather than IPE activities.[6]

Tolle et al, mentioned case studies, on and off campus activities, service learning, simulations, and standardized patients as part of their IPE implementation. Most of the programs surveyed used either on-site or off-site clinical activities for IPE.[7] As in the Bagge study, they stated the same type of activities. IPE activities that are typical of dental hygiene programs were patient simulations, case studies, on and off campus clinical activities, service

learning, health mentors, standardized patients, or a combination of approaches.[2] Case studies was the most shared IPE activity, followed by on and off clinical rotations, patient simulations, and service learning. A third of subjects had reported working closely with other healthcare profession during their education.[2]

Barriers to IPE in Dental Hygiene Programs

In the Ferguson-Inglehart study, program directors had disclosed the significance that IPE plays in both the hygiene profession and in a professional level. But the lack of effort in including more IPE activities into their curriculum was clearly noted. One issue that can be hindering the efforts in including IPE activities into hygiene curriculums, can be the fact that many administrators and faculty have no concept of what IPE is. According to Ferguson et al, True IPE activities incorporate shared work in clinical patient care and are embedded across the curriculum. [6] If dental hygiene faculty and administrators know exactly what IPE is, then they can confidently recognize, identify, and adjust or additions to their dental hygiene curriculums to better address the CODA standards of care. Equally, they can successfully develop and incorporate both clinical and classroom IPE activities to prepare their students to be able to function as an effective member of an integrated healthcare team and thus deliver the highest quality of care their clients. Other major obstacles to implementing IPE mentioned in this study were lack of support from administrators in facilitating change in staff, faculties reluctant to change and the newness of IPE, and lack of creating partnerships with other healthcare professions.[6]

The accreditation standards have also impacted the implementation of IPE into dental hygiene programs. Unlike the Dental accreditation standards, the Dental Hygiene CODA

standards simply suggest IPE, in standards 2-13, 2-15, and 2-23. Whereas the Dental standard 1-9 states, the dental school must [sic] show evidence of interaction with other components of the higher education, health care education and/or health care delivery systems. This is a direct statement that requires accountability.[6] This statement clearly reinforces the standard that all students must achieve upon graduating from an accredited dental program. This can be quite challenging for dental hygiene faculty to address IPE components in their curricula when they have no clear guidelines to follow. Because curricula are often driven by accreditation standards, they can motivate change. Therefore, the lack of accountable IPE standards may present a significant barrier to the incorporation of IPE into dental hygiene education.[6]

Training experiences and professional education in IPE has greatly impacted the confidence, skills set, and knowledge of students. When students are limited in these experiences, they can often feel unsure about working in collaborative settings and even not feel as a primary member of the collaborative team.[1] Further research revealed that many dental hygienists felt that their knowledge and confidence in managing specific risk patients needed improvement.[1] This was also contributed to a lack of IPE.

In the Casa-Levine study, it was noted that most healthcare programs, have historically taught their students to learn and practice in silos, thus making a team approach not widely accepted by these faculties. Because many academic leaders do not understand or have much experience with IPE, many are resistant incorporating something that is new and foreign into their course content.[1] This inhibits collaboration experiences for students and faculty alike.

Regarding the Bagge study, there were also a fourth of dental hygienists who felt a lack of perceived need to collaborate with other healthcare professionals.[2] Although this study did not identify if respondents did not see the need for communicating with other healthcare professionals to manage patient care or if they did not value IPC for improved patient outcomes, reasons for not collaborating with other healthcare providers were "lack of need", "lack of time", and "not in the job description/not allowed".[2]

Referring to Tolle et al, study, most respondents made a note that they would like to see a greater focus on IPE in the dental hygiene curricula but admitted that their current curricula did not meet the collaborative care model and felt short of meeting this component.[7] This was due in part of not being able to incorporate IPE into an already overloaded requirements and schedules. Yet the most cited barriers noted was time.[7] Programs, faculty, scheduling, curriculum, and students were among the other obstacles stated. Respondents had brought up the topic of faculty implying that they believed that their coworkers would not support or engage in IPE compared to themselves.[7]

Benefits of IPE Programs

Despite the barriers that accompany IPE, there are also several benefits. One of the main benefits commonly stated in all the studies, was that IPE would benefit students to become highly competent and effective members of a healthcare team and be able to deliver quality care to their patients all while improving patient health outcomes.[1] One example of successful IPE program is that of Louisiana State University Health Science Center (LSUHSC). Its program objective is to introduce dental and dental hygiene students to interprofessional education, implements IPE into the curriculum within the first academic

year. Programs like these are valuable because they allow dental students the opportunity to educate other healthcare students on the connection between oral health and overall health, better known as the oral-systemic link. In addition, these programs provide students with the opportunity to learn about other healthcare disciplines, familiarize themselves with the roles of providers within those disciplines, and the opportunity to ask questions to students studying those disciplines.[8]

Another benefit of IPE programs is that they identify barriers and improve IPE experience amongst students. Areas where students require more knowledge and understanding can be identified, retaught, and reinforced. Furthermore, any disconnect or lack of involvement from any healthcare program can be addressed and encouraged. Students can learn to perfect both their communication and collaborations skills; a necessary part of integrating services to provide optimum patient care.

Second, according to Casa-Levine, the dental hygiene profession can remain relevant in an evolving healthcare system if they implement IPE methodologies and developing IPC experiences. Next, by changing the dental hygiene's curricula to include IPE, oral care providers can reach the goal of improving their client's oral health by working closing other oral care providers including patients.[2]

Third, IPE experiences can lead to a deeper understanding of the roles and responsibilities of other healthcare providers, increase interprofessional communication skills, better skills, and positive attitudes and establishing effective workplace relationships within the integrated healthcare team.[2]

Conclusion

After reviewing the data, most dental hygiene programs partaking in these research studies have initiated some IPE into the dental curriculums in the form of the most favored consisting of volunteer activities, case studies, clinical rotations. Regardless of the form of IPE being involved in dental hygiene curricula, the fact that the concept of IPE is included as part of dental hygiene program shows small and gradual advancement in initiative and acknowledgement that this innovative approach is critical in dental hygiene education. Even though the interpretation of what IPE is can vary from program to program, those who participated in these studies are still emphasizing IPE activities, even those with no healthcare programs on campus. Still, one cannot discount that for IPE activities to be successful, they must not only require that healthcare students in a classroom work alongside each other during their education, but these experiences must be meaningful interactions amongst these students.[9]

The integration of interprofessional education must begin with the faculty. Their knowledge and expertise in this content and how they implement it into the curriculum will only establish and influence a collaborative mindset and culture within the dental hygiene student population. Likewise, IPE is vital in preparing the future dental workforce on how to effectively collaborate with other professionals to address and treat complex patient needs. By working together, the patient benefits by being treated in a collaborative manner. Currently, dental hygiene programs are integrating only a minimum of IPE activities into their curriculums; this is not sufficient to change the lack of integration that dental hygiene professionals play in the oral-systemic link.

Still, many learning institutions name time, scheduling, and lack of trained staff, as common barriers for incorporating IPE into curriculums. Despite making the effort of

including IPE activities for their students, many learning institutions are still not in full compliance with meeting the required competencies or standards. Through IPE, dental hygiene faculty can change the mono professional mentality that has isolated dental hygiene students from the rest of the healthcare professions. Although there are several hurdles with integrating IPE initiatives, the benefits of IPE are obvious.

Chapter III. Methods and Materials

Introduction

This descriptive research focused on studying the curriculums of dental hygiene programs in the United States. A review of the educational models of these institutions was conducted to determine if any forms of Interprofessional Education (IPE) are being implemented. As stated in the CODA Accreditation Standards for Dental Hygiene Professions, IPE is a critical component in the development of future dental hygiene professionals. IPE is not only vital in preparing students to be collaborative members of the healthcare system, but it contributes to the improvement of society's oral health. This is because students can exchange their expertise with other providers to deliver high quality complex patient care. Previous studies have shown that most dental hygiene programs integrate minimal or no interprofessional activities in their curricula. This study aimed to determine whether IPE activities are being applied, and if so, identify the types and explore possible solutions for increasing IPE into busy curriculums. Faculty was queried regarding program curriculum and implementation of IPE. Evaluation mechanisms will be analyzed.

Sample Description

The population consisted of program directors and faculty members of entry-level dental hygiene programs within the United States. Upon review of the American Dental Education Association website, there are currently 327 entry level dental hygiene programs. Because this study focused on IPE within dental hygiene program curriculums, the accessible

population was program directors. Since the Program Directors allow for the investigator to access their colleagues, a snowball sampling technique was to be implemented by each program director to disseminate the original survey to their program faculty. All faculty from all experience of teaching levels were encouraged to participate. This allowed for a better perspective on how faculty view the importance of interprofessional education.

Research Design

Although many research approaches can be utilized for dental hygiene research, for this research study, a descriptive approach was used. The descriptive approach has also assisted the investigator with obtaining information with describing and identifying the presence of interpersonal education within dental hygiene curriculums. The purpose of this study was to determine if programs are including the component of interprofessional education (IPE) within their dental hygiene program's curricula. The most reasonable method to obtain data is through an original survey.

The survey consisted of 10 questions and took participants no longer than 5 minutes to complete. The first question asked was to determine what type of programs are involved in IPE. This prompted the participant to indicate whether their program granted a certificate, associate, or bachelor degree. Questions 2-7 were constructed for participants to base their responses on a Likert scale with 1 being "strongly agree", 2 being "agree", 3 being "neutral", 4 being "disagree", 5 being "strongly disagree", and 6 being "not applicable". Questions 2 and 3 entailed statements pertaining to faculty like, "My program is supportive of IPE initiatives and provides resources to assist faculty during student IPE experiences" and "Faculty and staff support and encourage their students to work in diversified environments".

Whereas question 4 focused more on the students' ability and skill, which was reflected by the statement, "Upon graduation, my students are equipped to effectively work in an interprofessional setting". Questions 5-7 assess if faculty participate in yearly IPE initiatives, whether faculty meet with other healthcare professionals to develop IPE curricula, and if their IPE initiatives meet CODA standards. Question 8, designed as a multiple-choice question, asked, "To what extent does your program curriculum include IPE initiatives?" Answers offered were based on time such as none provided, less than 1 hour per semester, 1-2 hours per semester, 3-4 hours per semester, or more than four hours per semester. Regarding questions 9 and 10, the respondents were asked to choose the type of IPE activities that are implemented in their respective programs and identify the most common barriers their program encounters when implementing IPE initiatives. Both questions allowed the participants to select all options that apply, including "other" which then prompted them to input an individualized response.

Data Collection

The 10-question survey was generated using a survey software called Microsoft Forms. Once approved by UNM HRRC (study # 23-140), the Principal Investigator disseminated the survey to U.S. dental hygiene program directors by email. Participants of the study were then emailed a cover letter and informed that their participation in this survey was strictly voluntary. Once the participants clicked on the link, their consent was obtained. Participants' responses were kept anonymous by means of choosing the setting "Anyone can respond" tab in the Microsoft Form. This also was done to avoid recording names of emails of participants. None of the survey questions asked participants for any personal identifying

information therefore none was collected from the participants. Once the survey was sent, subjects had two weeks to answer with a reminder email sent after one week. After the allotted time, the survey was closed, and all survey responses and data were collected on a excel spread sheet for analysis.

Data Analysis

All survey data was collected from Microsoft Forms. The information gathered from the respondents was then transferred into Excel spreadsheet for review. Descriptive statistics was used to analyze the data gathered from the data sets. Percentage was calculated for most of the questions to compare responses. Frequencies were also used to determine analysis for data responses.

Chapter IV. Results

Summary of Results

The survey invitation email was sent to 307 program directors of the 327 entry-level dental hygiene programs in the United States, with lack of access to email communication attributing to the contact difference. The date the survey opened was April 17, 2023. A second email was sent a week later to remind participants to complete the survey. After a duration of 2 weeks, the survey was closed. Microsoft forms tallied 53 (n=53) volunteers that responded to the 10-question survey. An Excel spreadsheet was utilized to analyze the data.

Beginning with question #1, faculty were asked to indicate which type of hygiene program they were associated with. Figure 1 presents data from question #1 to show programs granting an associate degree accounted for the most responses with 40 participants (n=40). Thirteen (n=13) respondents were associated with programs granting a bachelor degree. Candidates from programs that granted certificates did not participate in the survey and consequently no information or data was gathered from this population.

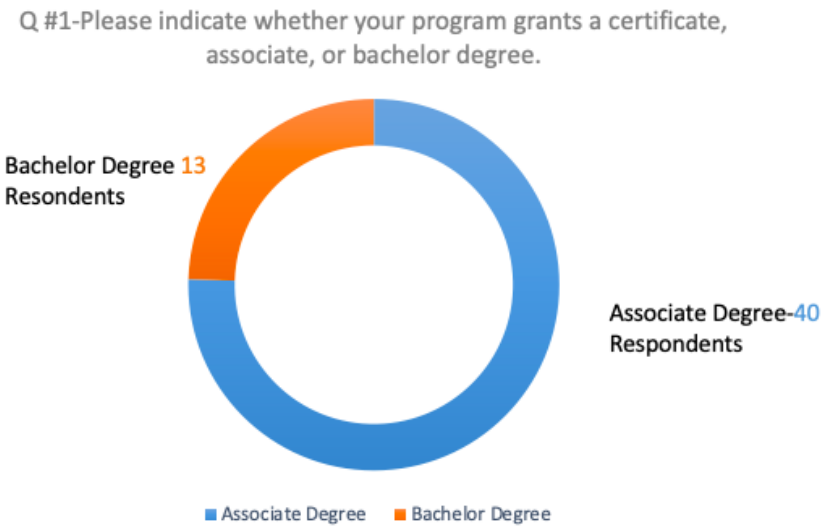

Figure 1. Survey participants and their programs' education level.

When asked, "My program is supportive of IPE initiatives and provides resources to assist faculty during student IPE experiences," responses varied from associate to bachelor degree programs. Figure 2 reveals participants' response to this statement. Associate degree programs selected multiple answers in their responses: 47% answered strongly agreed, 32% agreed and 5% disagreed, 13% were neutral, and only 3% responded with not applicable.

Respondents from the bachelor programs responded with 46% said they strongly agree and 54% agreed. None of the respondents from either group replied with strongly disagree.

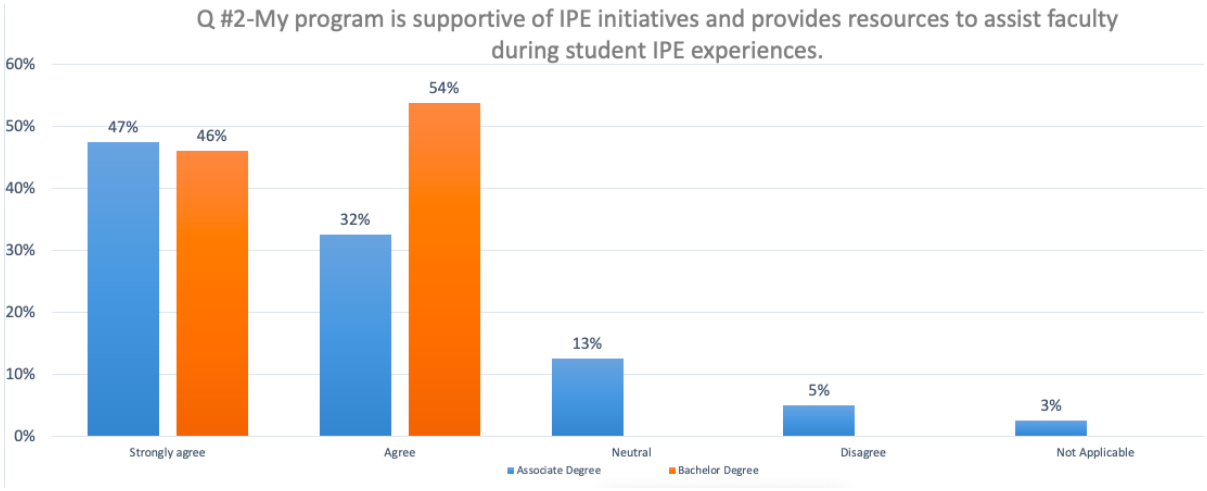

Figure 2. Survey participants' response to support IPE initiatives and resources to assist them with student IPE experiences.

Question #3 read, "Faculty and staff support and encourage their students to work in diversified environments". Figure 3 shows 62% accounted for the members of the associate granting program that strongly agreed, 35% agreed, and 3% were neutral.

As for the bachelor programs, Figure 4 shows many of the respondents either chose strongly agreed which was represented by 69% and agreed by 23%. And 8% of these members were neutral.

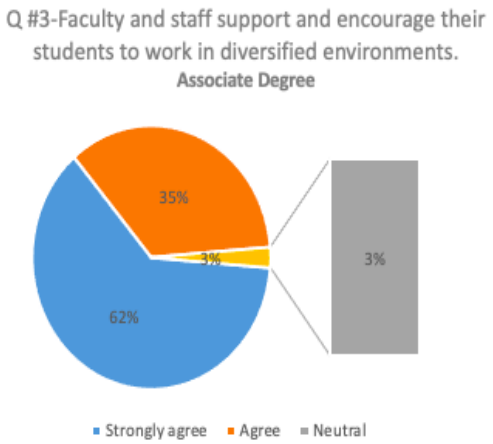

Figure 3. Percentage of faculty and staff from associate programs who support and encourage students to work in diversified environments.

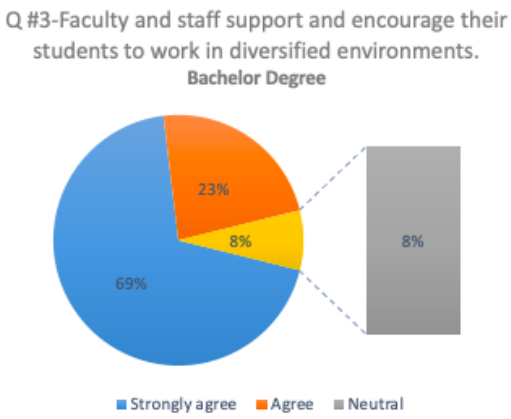

Figure 4. Percentage of faculty and staff from bachelor programs who support and encourage students to work in diversified environments.

The fourth question read, "Upon graduation, my students are equipped to effectively work in an interprofessional setting". Figure 5 discloses that 60% of associate program faculty responded with agree and 27% replied with strongly agree. Only 13% accounted for those individuals that disagreed or who chose a neutral response.

Refer to figure 6 regarding the faculty from bachelor degree granting programs, 54% agreed and 31% strongly agreed leaving 15% that were neutral. None chose the option "disagreed" for this question.

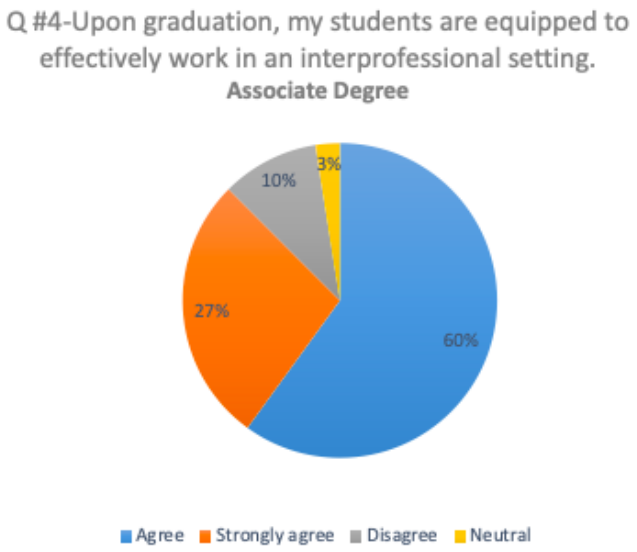

Figure 5. Faculty from associate degree programs that believe students are equipped to work in an interprofessional setting.

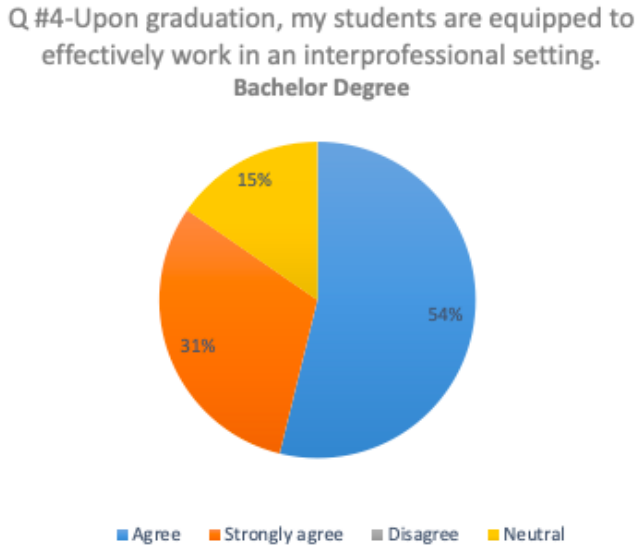

Figure 6.Faculty from bachelor's degree programs that believe students are equipped to work in an interprofessional setting.

When answering Question #5, “The faculty of my program participate in yearly IPE Initiatives”, 30% of the associate programs strongly agreed, meanwhile, 28% agreed. Those who chose the disagreed response was 17%. Twenty-three percent accounted for the neutral responses. Lastly, a minimum of 2% of the participants chose the not applicable option.

Of the bachelor degree faculty, 62% strongly agreed, and 30% agreed and 8% answered neutral. None from this population chose the disagree, strongly disagree, or the not applicable options. See Figure 7 below to view responses of both groups.

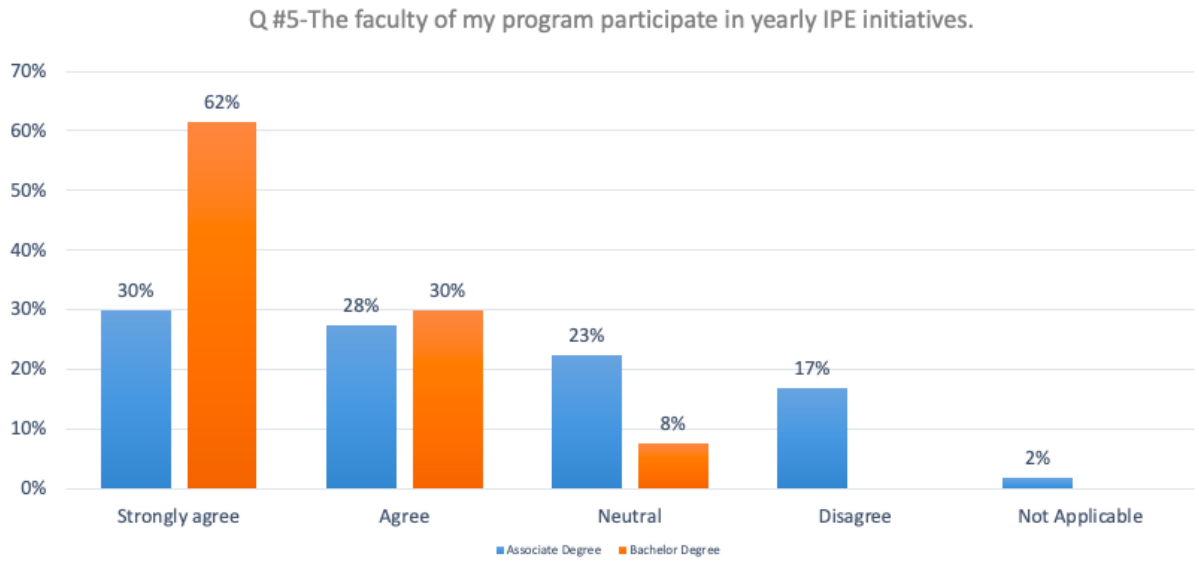

Figure 7. Faculty from both associate and bachelor’s degree programs who participate in yearly IPE initiatives.

Regarding Question #6, “The faculty of my program meet with other healthcare professionals to develop IPE curricula on a semi-yearly basis”, the responses of the associate faculty who chose the strongly agreed was 20% and for those who agreed were 35%. When viewing the responses for the disagreed category, 25% chose this response, while 7% of the participants replied with a strongly disagree. Those who chose a neutral response were 10%

of associate faculty and 3% chose the not applicable option. Figure 8 highlights these responses in blue.

Of the thirteen participants who represent a bachelor degree program, twelve of them answered questions #6. This constitutes a 92% response rate for this specific question. For those that answered, 23% strongly agreed, 38% agreed, 23% disagreed, 8% were neutral. Participants' responses are in orange presented in figure 8.

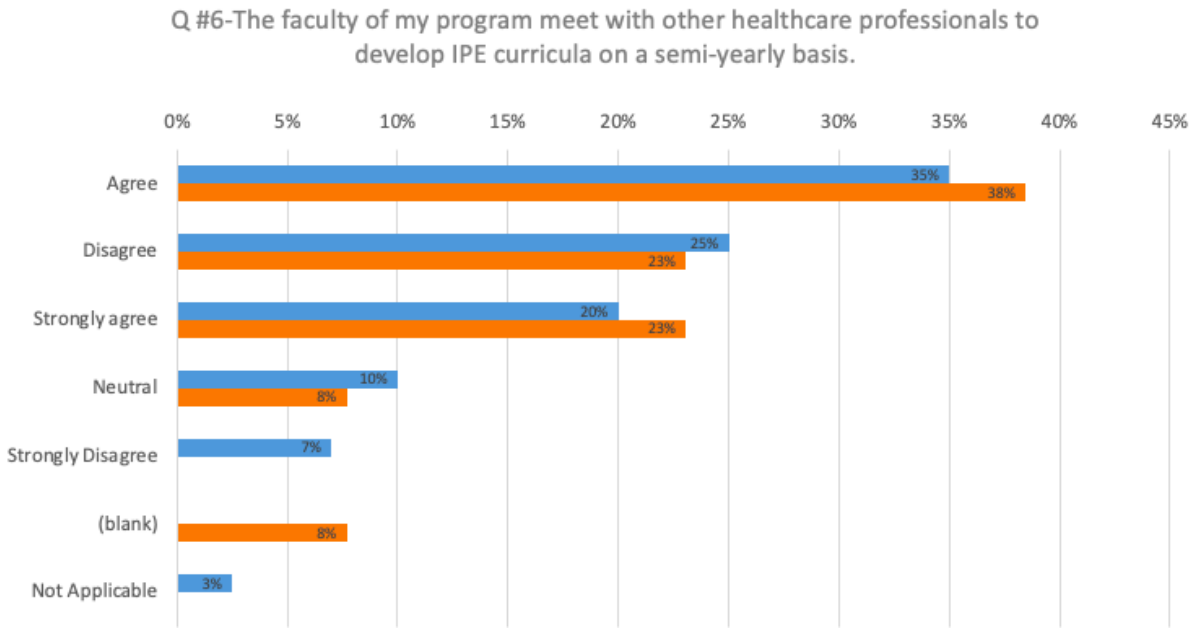

Figure 8. Faculty from both associate and bachelor's programs meet with other healthcare professionals to develop IPE curricula on a semi-yearly basis.

When asked question #7, "My program curriculum participates in IPE initiatives that meet CODA standards", associate level programs ranked highest in the strongly agree and agree categories. Figure 9 reveals 50% strongly agreeing, 30% agreed, 10% chose the neutral response, 5% disagreed, 3% strongly disagreed, and 2% picked not applicable.

Figure 9 also reveals that all members from bachelor programs either strongly agreed with 77% or agreed as 23% with this statement.

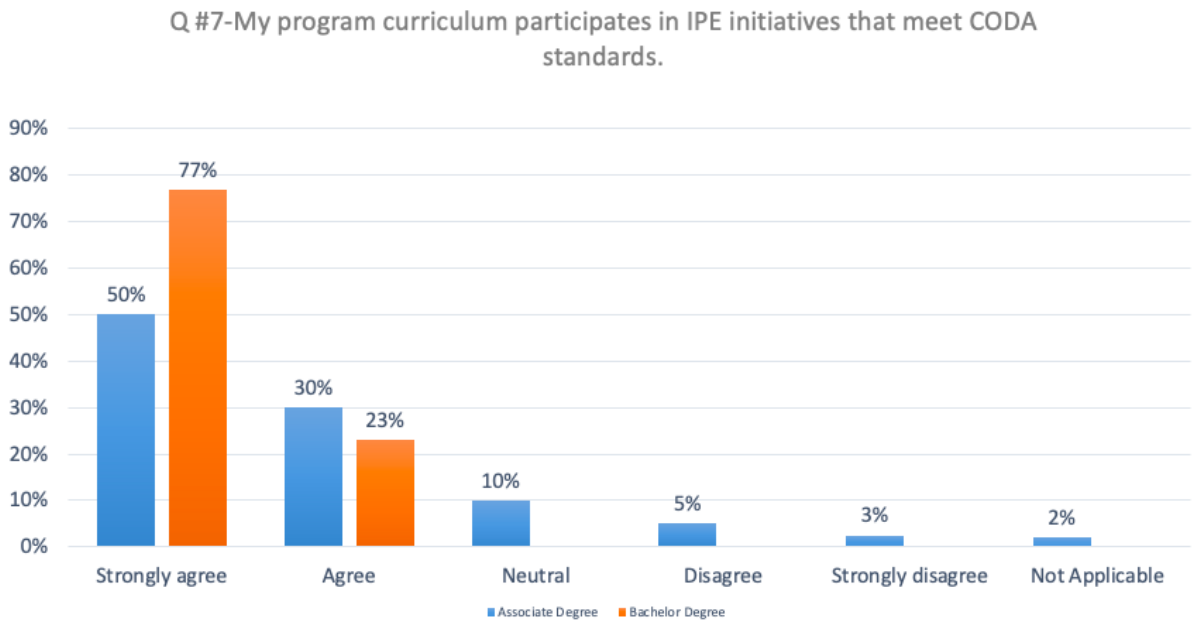

Figure 9. Participants' response regarding program curriculum participates in IPE initiatives that meet CODA standards.

Question #8 pertained to the number of hours that a program includes IPE initiatives. Upon viewing the responses, most participants from the associate granting programs chose between the range of 1-4 hours per semester or more than four hours per semester. With 37% accounting for the 1-2 hours per semester category (See figure 10).

Figure 10 also includes respondents from the bachelor degree programs. They chose only from the first three categories, with 84% accounting for its highest responses in the "more than 4 hours per semester" category.

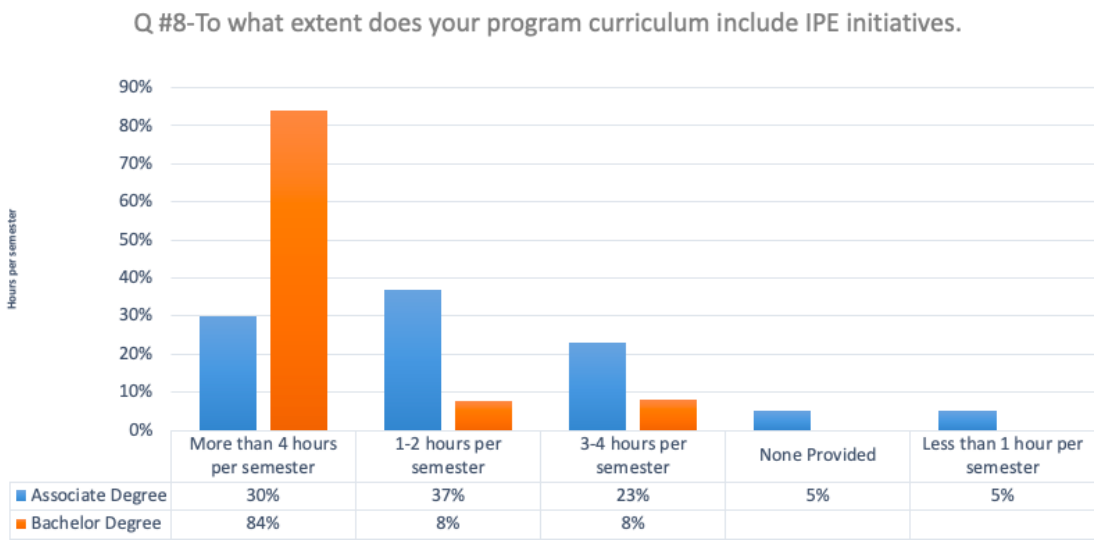

Figure 10. Participant response on extent program curriculum includes IPE initiatives.

For question #9, "Please select which types of IPE initiatives your program participates in", respondents were allowed to pick from one or more of the following 7 options: clinical care, including rotations outside of dental, simulations to include patient simulations, didactic lectures, case studies, team-centered projects, none, and other. Figure 11 includes associate degree participant responses. Case studies was the most favorable IPE activity represented by 23%, followed by didactic lectures at 21% and team centered projects as the third most popular activity at 20%.

Figure 12 illustrates the responses from the bachelor degree faculty. This pie chart shows that team centered projects together with didactic lectures ranked highest with 22% followed by case studies at 20% as the most carried out IPE activity in their programs.

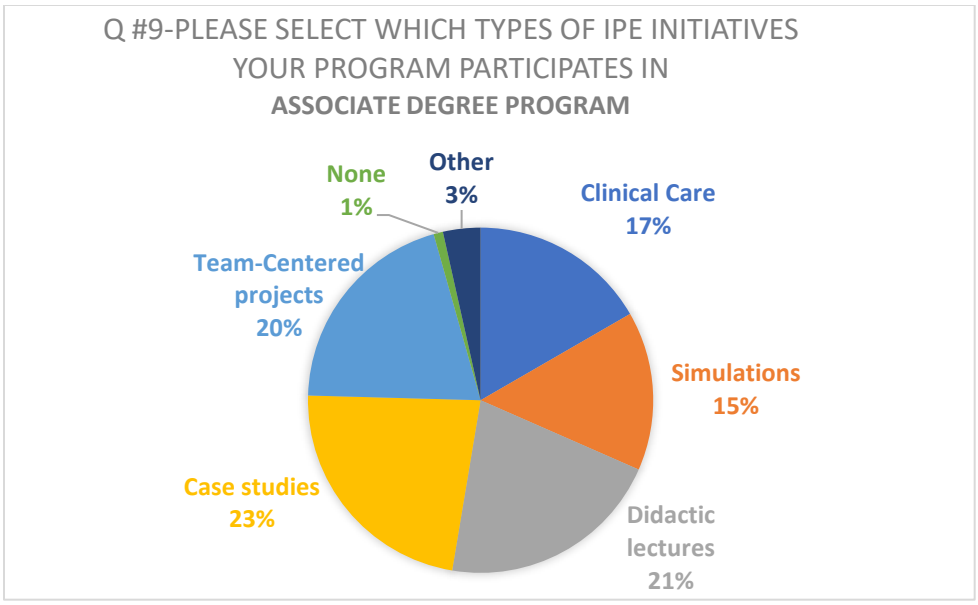

Figure 11. Associate faculty responses for the types of IPE initiatives that their programs participate in.

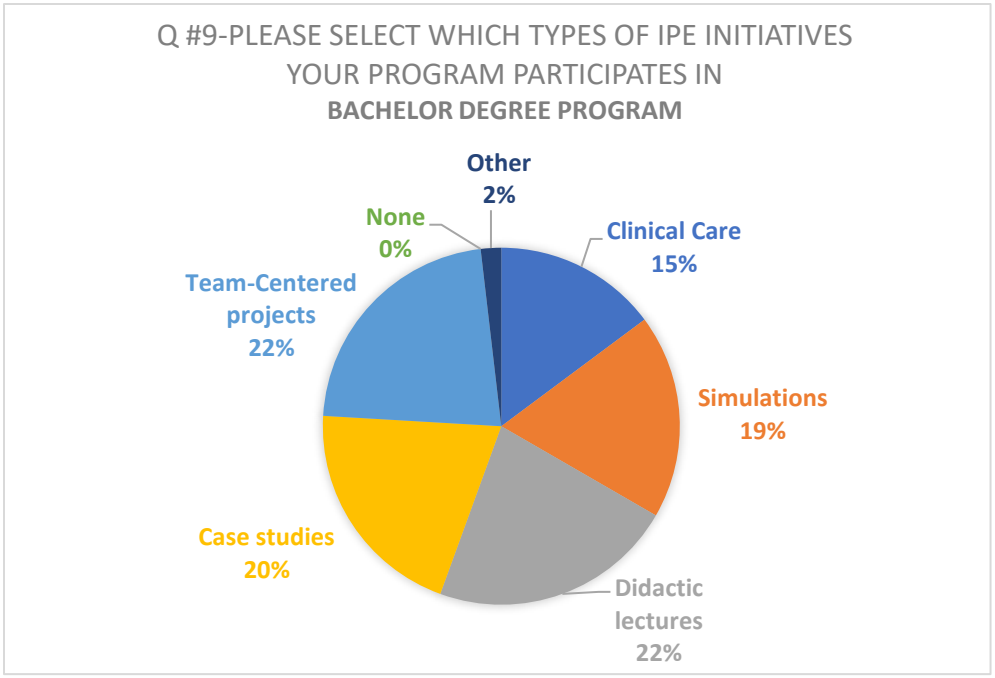

Figure 12. Bachelor faculty responses for the types of IPE initiatives that their programs participate in.

Finally, when asked about the barriers their program encounters the most when implementing IPE initiatives, 57% of the participants from the associate level program reported time as a factor for not incorporating IPE initiatives, 20% reported resources, 7% responded none, and lastly, 5% of the participants felt that support was a factor limiting their IPE initiatives (See figure 13).

Similarly, 77% of respondents from a bachelor program also ranked "time" highest as a barrier when implementing IPE. The least barriers chosen were resources, knowledge, and "other" with an open response of "My program is very supportive of IPE initiatives", which all had an 8% percent rate. (See figure 13)

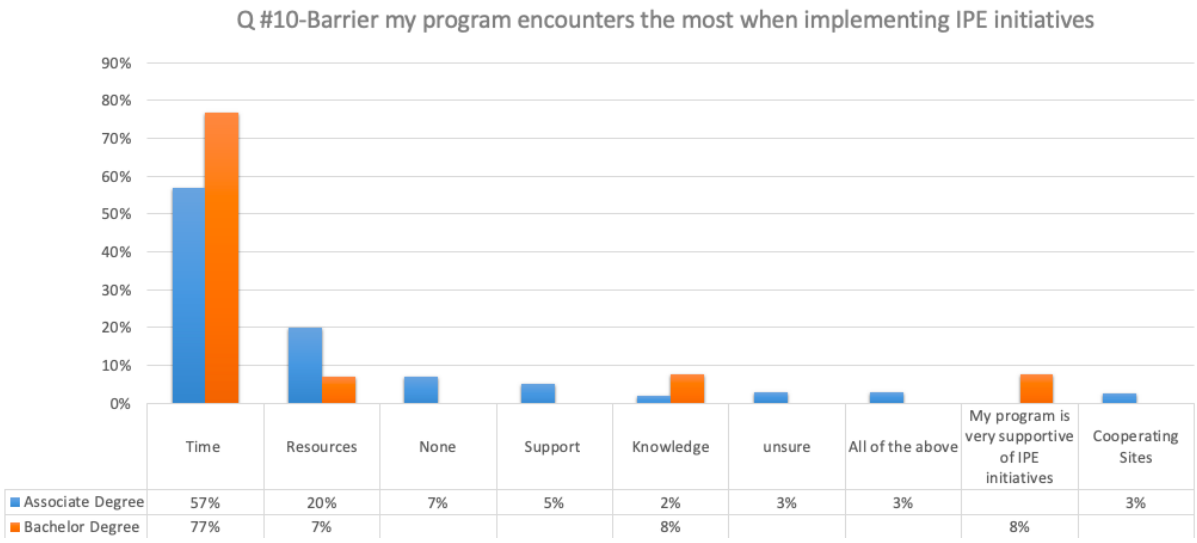

Figure 13. Barriers that programs encounter the most when implementing IPE

Discussion

Principle Findings

The number of participants that responded to the survey (n=53) was not a significant sample size of the targeted population and a 17% response rate. All program faculty that participated in the survey were related to either an associate or bachelor degree granting program. As with the Bagge, Tolle, and Ferguson-Inglehart studies, program directors and faculty from associates level programs were most receptive to answering surveys and providing feedback than their bachelor counterparts. It was also noted that their responses varied throughout the survey.

Both groups felt favorable when asked if they were supported and given the necessary resources needed to provide their students with IPE experiences. This was reflected by the high percentages provided in the agree and strongly agree categories. This was not the case in the Tolle study. When compared to the bachelor degree programs, associate degree programs were shown to lack in participation when it came to implementing IPE activities. These faculty voiced that they lacked both the resources and the faculty to implement IPE into their program curricula.[7] As mentioned previously, this may be related to the number of faculty employed in these programs and the lack of knowledge and training in IPE within the faculty. Additionally, associate level programs have different objectives when compared to those from bachelor level programs. Associate level programs are more inclined on preparing students to be competent in clinical skills rather than collaborative skills.

In the area of supporting and encouraging their students to work in diversified environments, both groups' percentage rates were high in the strongly agree and agree categories. The high percentages can infer that faculty are rather confident in fulfilling these

requirements and feel secure that they are providing these experiences and training to students in their programs. Considering that none of the two groups chose to disagree, strongly disagree, or not applicable, this can further reveal that most faculty from this study are providing the needed support for their students to function in diverse environments.

Faculty from both the associate level group and the bachelor level group had a high percentage when it came to either agreeing or strongly agreeing to equipping their students to work in an interprofessional setting. Only 10% of the associate faculty, which is equivalent to 4 (n=4) individuals, disagreed to this statement. Because most participants responded with agree or strongly agree to this statement, it can support that most of the faculty are in fact including an IPE component into their program curricula. Furthermore, the survey data reveals that their students are trained in IPE initiatives and are prepared to work in the interprofessional setting upon graduation. To further compare these results, three of the previous studies reviewed in this paper revealed that many program directors and program faculty agreed that IPE and IPC increase students' communication skills, especially when engaging with patients and with other healthcare providers, increased confidence when working with other healthcare providers in a collaborative professional setting, students' ability to problem solve and to provide comprehensive care, and lastly, positive attitudes towards collaborating with other healthcare providers. These are all skills required to be an effective collaborative team member and work within an interprofessional environment.

When asked if faculty of their programs participate in yearly IPE initiatives, associate faculty scored slightly lower than their bachelor counterparts regarding the agree category and substantially lower in the strongly agree category with a 32% difference from the bachelor program faculty. While those from the bachelor degree related programs were

mainly secure when answering if they meet yearly IPE initiatives with a percentage of 62% in the strongly agree category. Those subjects related to the associate degree programs varied in their responses. Associate degree granting programs also answered in the neutral, disagree, and not applicable sections more when compared to the bachelor degree programs. These results can imply that there is either no participation or a lack of participation from associate program faculty from this study participating in yearly IPE initiatives. Again, associate level programs may not have the appropriate resources to implement IPE initiatives into their programs which may have prompted them to respond the way they did.

Although when responding to the question asking if program faculty are meeting with other healthcare professionals to develop IPE curricula on a semi-annual basis, almost half of associate members agreed that their faculty are meeting this requirement. This could suggest that although these faculty may have scored low in participating in yearly initiatives, they are putting more effort into collaborating with other healthcare professionals more often to develop IPE curricula. Faculty from the bachelor group answered similarly when it came to disagreeing and strongly agreeing with the statement, but many of the respondents agreed.

In asking if program curriculum participates in IPE initiatives that meet the CODA standards, again, the associate level members provided answers for all seven categories. Respondents from the associate degree programs favored both the agree and strongly agree categories with 50% strongly agreeing and 30% agree to the statement. The same was true of the bachelor level programs. All thirteen (n=13) respondents collectively ranked high in both the agree and strongly agree options. This suggests that both faculties agree that their programs are following and referring to the CODA standards when implementing IPE activities into their curriculum.

Referring to the amount of time the program curriculums include IPE initiatives, the associate level program members scored higher in categories labeled 1-2 hours per semester and 3-4 hours per semester when compared to the bachelor program faculty. However, in the more than 4 hours per semester option, the faculty from bachelor programs reported as 84% when compared to 30% accounting for the associate group. These results indicate that faculty of both programs provide IPE initiatives at minimum of 1 hour per semester, but oftentimes exceed that within their program curricula. When compared to the Tolle study, the time that IPE initiatives were being implemented were 1-4 hours per week, where most of the respondents accounted for 1 hour per week.[7] This can suggest that dental hygiene programs are incorporating IPE into program curricula more frequently. A significant point to consider.

As for the top three IPE activities implemented in program curricula, both populations consistently chose between case studies, didactic lectures, team projects, followed by clinical care and patient simulations. Based on the previous studies, case studies, which are known to be a favorably common activity amongst dental hygiene programs, accounted for 23% of the associate faculty, making this the most implemented activity within their programs, with didactic lectures falling in second and trailed by team centered projects for third. For the faculty related to bachelor degree programs, the data revealed that team centered projects together with didactic lectures ranked 22% as their most implemented IPE activity followed by case studies at 20%. The “other” option allowed participants to include specific IPE initiatives that were not otherwise offered. Activities noted by associate faculty were: educating Nursing Students on campus about oral care needs of patients in the hospital setting, service events, community health fairs/health screenings, work with other programs within the college such as teaching medical assisting students to apply Fluoride Varnish,

teaching CNA's in skilled nursing care facilities about denture care, working with students in medical schools about intraoral exams, clinical interactions in community based medical facility that included dental, and finally, interactive program with other allied health students sharing of patient care information. These responses seemed more like true IPE activities since many of them required students from different healthcare programs to work together to provide patient care. Moreover, it indicated that the associate faculty that provided these answers seemed extremely knowledgeable in IPE despite studies showing a lack of participation in IPE. Faculty from the bachelor programs did not provide as detailed responses. Previous studies indicated that that most common type of IPE activities implemented in hygiene programs were case studies, on and off clinical rotations, and volunteer activities. In this study, activities mainly chosen were case studies, team centered projects, and didactic lectures.

Concerning the issues of citing barriers to implementing IPE, as was the case in the previous literature review, both program populations reported time as a common theme. Fifty-seven percent accounted for associate degree programs and 77% for bachelors. Pertaining to associate level programs, 20% named resources, 7% chose none and 5% chose support as barriers. As for the bachelor programs, 7% chose resources while knowledge and other which indicated one participant stating that “My program is very supportive of IPE initiatives” with both ranking a percentage of 8%. Less common responses amongst both faculties were “knowledge”, “unsure”, “all of the above”, “other”, and “cooperating sites”.

Limitations of Study

One limitation affecting the outcome of this study, may be the number of responses received. Out of 307 emails sent out only 53 (n=53) faculty and program directors responded

to the survey. Respondents that completed the survey belonged to either an associate or bachelor degree level program. None from a certificate degree level program participated. Since the sample size is not adequate, this does not give accurate account of participants responses or generalizability for IPE curriculum in the U.S and may skew the statistical data.

Secondly, faculty and program directors might be defining the term interprofessional education differently. This might cause discrepancies in determining if IPE activities are in fact being implemented, because faculty's perception of IPE may differ. Some may view volunteer activities as forms of interprofessional education. Others may view integrating social workers to provide professional services in their dental clinic as true IPE experiences. Likewise, knowledge and experience with IPE amongst faculty and program directors may also influence the outcome of the study. Faculty may have prior knowledge and be novice, intermediate, proficient, or expert in incorporating this component into their course curriculums or programs. And yet, some faculty might not have the professional experience in knowing what IPE is or how to implement it.

Time or presence can also limit the extent of the study and the response rate. The sample population of faculty and program directors are busy educators with numerous responsibilities. It is possible that the survey window did not provide the possible participants enough time to complete the survey. This study also did not consider scheduled faculty leave.

Recommendations for Future Studies

A recommendation for future studies would be to include programs granting master degrees. This would provide a larger and more diverse sample size. This would also allow for faculty to be represented equally and provide more specific information pertaining to all dental hygiene programs in the U.S. Furthermore, sending the survey in the middle of the

semester may gather more responses rather than sending it towards the end, when faculty is occupied with tasks such as finalizing grades.

Possible consideration for future questions may be to include question(s) that identify the title and job description of each participant to fully understand the extent in which IPE is being incorporated throughout the ranks of dental hygiene program faculty, whether it be at the administrative or faculty level or is localized to a certain group. This may help to identify additional barriers within the program curricula. Because all previous studies have named time as a common barrier, questions to ask in the future may pertain to asking subjects for solutions rather than barriers to implementing IPE. This may help to identify areas where time is a factor and find potential solutions to these obstacles.

In the future, faculty could be provided an open answer option so that they can elaborate more on the specific activities and experiences they are providing for their students to work in nontraditional workplace settings including how they monitor their staff in promoting this IPE initiative. An open-ended question could also provide the space for faculty to comment with solutions to some of the barriers they may face while incorporating IPE. A final recommendation could be a longitudinal study to see if the inclusion of IPE activities increases over a certain time.

Conclusion

Associate and bachelor granting programs were consistent with rating high in the "agree" and "strongly disagree" categories for most of the survey questions. Results indicate that components of IPE are being incorporated at a minimum and programs are referencing the CODA standards for guidance. It further reveals that students are being trained and prepared to work in diverse and integrated workplace settings upon graduation and that

faculty are taking initiatives to participate in IPE and are collaborating with other healthcare faculty to develop IPE curricula. Despite, time being a theme for most dental hygiene programs, the study disclosed dental hygiene programs acknowledge the importance of IPE and are incorporating the same IPE activities into their programs.

Some limitations of the study were the type of program faculty that participated in the study. Many faculties varied in their definition of what IPE is and what activities they considered IPE related. The level of staffs' knowledge and experience in IPE also varied. And time and presence of faculty could have limited the study and response rate.

In the future, recruitment of faculty and administration from master programs will be beneficial. Possibly sending the survey out in the middle of the semester rather than the end. Design future questions on diverse work environment to be open questions to get more accurate data on the specific activities or experiences employed by faculty and how staff is monitored for this initiative. And instead of barriers to IPE, ask faculty to offer possible solutions to implementing IPE in the dental hygiene curricula. Lastly, continue with a longitudinal study to see if IPE activities increase over time.

Chapter V: Article for Submission

Journal of Dental Hygiene

Title Page

Analysis of Interprofessional Education Inclusion Within U.S. Dental Hygiene Programs' Curricula

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ABSTRACT

Purpose: The purpose of this study was to collect information on the implementation of IPE activities within dental hygiene programs and whether program faculty are implementing these components into their program curricula. Furthermore, this study helped identify which types of IPE activities were being conducted and if these activities met the CODA standards.

Methods: Participants of this study consisted of entry level dental hygiene program directors and faculty with various teaching levels within the U.S. An original survey was developed in Microsoft Forms and emailed to program directors. A snowball sampling technique was implemented by each program director to disseminate the survey to their program faculty. The survey was opened for a duration of two weeks and data were analyzed through descriptive statistics.

Results: A total of 53 participants answered the survey with 40 (n=40) being from associate programs and 13 (n=13) from bachelor programs. Results revealed that both programs agreed IPE is significant and that they have resources and support to provide students IPE experiences, students are encouraged to work in both diversified and interprofessional settings. IPE activities implemented for both groups were consistently the same with most following CODA standards. Time was the most common theme for barriers for implementing IPE, but programs showed gradual progress towards initiating IPE into curricula.

Conclusion: Findings from this study may suggest that entry level programs are implementing a minimum of IPE initiatives into their program curriculum. Most programs participated in the same IPE activities with case studies, didactic lectures, and team centered projects being the most common form. Although time was a common barrier for all

programs, most faculty agreed that IPE is critical for students to be confident and competent members of the integrated team to deliver comprehensive patient care.

INTRODUCTION

The connection between oral and systemic health are irrefutably related. With more dental professionals taking on expanded roles in the healthcare system, dental professions are obligated to enhance their collaborative skills to work interdependently with other members of a healthcare team. As the dynamics of the healthcare system evolve, so must the education of dental hygiene students. Interprofessional education (IPE) allows students to expand on their experience and their roles in the collaborative work setting. IPE helps students stay current with the changing and complex oral care needs of their patients. Equally important, it improves the quality of patient care.

Although the dental hygiene curriculum is intense and builds on the students' knowledge of theory and clinical skills, the inclusion of IPE within the hygiene curriculum should strengthen and prepare the dental hygiene student to work as a critical member of an integrated team. Incorporating IPE into the dental hygiene curriculums is a critical component in addressing the nation's oral health. By including IPE early on in students' education, students will graduate having a strong knowledge of the responsibilities and functions of each healthcare profession. More importantly, they develop a mutual respect for each other's work and understand how each member's contribution impacts patient care.

Currently, research indicates dental hygiene programs are incorporating none or only the minimum IPE activities into their curriculums; this is not sufficient to change the lack of integration that dental hygiene professionals play in the oral-systemic link. Research has

shown that historically, many health science faculties were trained prior to the emergence of IPE and were acclimated to working in a uni-professional setting making it challenging to adopt a team-based approach into their teaching.[1] A review of the current educational model of dental hygiene curriculums needs to be conducted. Upon review, dental hygiene programs can make the necessary modifications so that their programs can implement more than the minimum IPE while making advancements towards resolving America's oral health crisis. There are several hurdles with integrating IPE initiatives into curriculums, but the benefits of IPE are evident.

IPE in Dental Hygiene Curriculums

As healthcare evolves, many academic institutions are now taking strides towards improving and revising their curricula to enable their students to improve the quality of treatment they provide to their patients, by implementing IPE into their programs.[3] In fact, Formicola et al, have noted that healthcare profession programs along with academic health centers, are being prompted to integrate joint learning opportunities into their programs so that students can develop a profound understanding of how the responsibilities and the roles that other healthcare professions along with teamwork can better serve their patients upon graduation.[3]And with the help of the Interprofessional Education Collaborative Expert Panel (IPEC), dental hygiene institutions throughout the U.S. can now incorporate the four IPE core domains identified by this board that are deemed necessary for all healthcare professions to incorporate into their program curricula.[3]

In 2009, a group consisting of six healthcare leaders from national organizations called the Interprofessional Education Collaborative (IPEC) was formed. Their goal was to assist in preparing healthcare students to work collaboratively to deliver team based patient

care and improve population health outcomes.[4] Originally the Interprofessional collaborative practice model was comprised of four domains. The domains are Competency 1-Values and Ethics, Competency 2-Roles and Responsibilities, Competency 3-Interprofessional communication, and Competency 4-Teams and Teamwork. These competencies are used to assess the effectiveness of IPE activities and promote healthcare teams.[2] But in 2016, after reviewing changes within the healthcare infrastructure, the IPEC board recognized the need to put more emphasis on population health and updated the competency model to reflect these changes.[4] This updated version integrates explicit population health outcomes alongside individual care competencies into an expanded competency model that is needed to achieve today's health system of goals of improved health and health equity across the life span.[4]

Currently this model places Interprofessional Collaboration as the principal domain and arranges the four domains under it along with sub competencies.[4] With the addition of sub-competencies, this helps to further define the four core competencies extensively and offers dental hygiene faculty a clear concept of what IPE is. Similarly, the sub-competencies can be utilized by dental hygiene faculty and administration as a roadmap or guide on how to specifically incorporate IPE activities or experiences into their programs and effectively meet the required standards. Moreover, they offer methods in how it can be demonstrated throughout patient care and amongst team collaborations.

Many accrediting agencies are now mandating learning institutions to format IPE activities for students.[3] One agency requiring the integration of IPE activities into curriculums is the Commission on Dental Accreditation (CODA).[5] Since CODA's mission is to establish, implement, and monitor the standards to improve the quality of education that dental hygiene students obtain from accredited programs, the recent standards which reflect

the inclusion of IPE into curriculums cannot be disregarded. The significance of interprofessional education is emphasized with the word "must" included in the accreditation standards for dental hygiene education programs.

Three accreditation standards imply that dental hygienists should provide oral health care in a manner that is harmonious with patient's other health care needs through collaboration with other healthcare providers when necessary.[6] The first CODA Standard, 2-13, states the following, Graduates must be competent in providing the dental hygiene process of care. This can be demonstrated by students providing suitable documentation and using risk appraisals and or forms to design their dental hygiene treatment plans.[5] Competency Standard, 2-15, states, Graduates must be competent in communicating and collaborating with other members of the health care team to support comprehensive patient care.[5] One example of how a dental hygiene program can show that they are following this standard is by hygiene students being able to demonstrate the ability to engage and converse with healthcare providers, groups, or individuals efficiently. A second example is evaluations developed to measure a students' performance and understanding of interdisciplinary teamwork and communication.[5] The third CODA Standard, 2-23, states, Graduates must be competent in problem solving strategies related to comprehensive patient care and management of patients. [5] This can demonstrate a program's compliance by including assignments or activities that requires students to problem solve issues related to complex patient care.[5] Since, the CODA standards are designed for Dental Hygiene Education Programs to graduate competent dental hygiene professionals, one cannot exclude those standards especially those implying IPE.

METHODS AND MATERIALS

The population consisted of program directors and faculty members of entry-level dental hygiene programs within the United States. All faculty from all experience of teaching levels were encouraged to participate. The most reasonable method to obtain data was through an original survey. The 10-question survey was generated using a survey software called Microsoft Forms. Once approved by UNM HRRC (study # 23-140), the Principal Investigator disseminated the survey to all U.S. dental hygiene program directors by email. Participants of the study were then emailed a cover letter and informed that their participation in this survey was strictly voluntary. Consent was posted in both the email as well as at the beginning of the survey. Once the participants clicked on the link, their consent was obtained. Participants' responses, names, and emails were kept anonymous. After two weeks, the survey was closed, and all survey responses and data were collected on a excel spread sheet for analysis.

Most questions were designed in a multiple-choice fashion. Only six questions required the respondent to answer based on a Likert Scale with 1 being "strongly agree", 2 being "agree", 3 being "neutral", 4 being "disagree", 5 being "strongly disagree", and 6 being "not applicable". Questions were based on faculty and their participation in IPE initiatives and program curricula. While other questions were based on the students' ability and skill. Two questions allowed for participants to select either one or more than one, including "other" which prompted them to input an individualized response.

The descriptive approach has also assisted the investigator with obtaining information with describing and identifying the presence of interpersonal education within dental hygiene curriculums. All survey data was collected from Microsoft Forms. The information gathered from the respondents was then transferred into Excel spreadsheet for review. Descriptive

statistics was used to analyze the data gathered from the data sets. Percentage was calculated for most of the questions to compare responses. Frequencies were also used to determine analysis for data responses.

RESULTS

Fifty-three participants completed the survey out of the 307 invited faculty asked to take the survey. The response rate was 17%. Beginning with question #1, faculty were asked to indicate which type of hygiene program they were associated with. Associate degrees accounted for the most responses with a score of 40 (n=40). Thirteen (n=13) respondents were associated with programs granting bachelor degrees. Candidates from programs that granted certificates did not participate in the survey and consequently no information or data was gathered from this population.

When asked, “My program is supportive of IPE initiatives and provides resources to assist faculty during student IPE experiences,” responses varied from associate to bachelor degree programs. Associate degree programs selected multiple answers in their responses. 47% answered strongly agreed, 32% agreed and 5% disagreed. 13% were neutral. Only 3% responded with not applicable.

Respondents from the bachelor programs responded with 46% the strongly agree and 54% agree categories. None of the respondents from either group replied with strongly disagree.

Question #3 read, “Faculty and staff support and encourage their students to work in diversified environments”. Sixty two percent accounted for the members of the associate granting program that strongly agreed, 35% agreed, and 3% were neutral.

As for the bachelor programs, many of the respondents either chose strongly agreed which was represented by 69% and agreed by 23%. And 8% of these members were neutral.

The fourth question read, “Upon graduation, my students are equipped to effectively work in an interprofessional setting”. Sixty percent of associate program faculty responded with agree and 27% replied with strongly agree. Only 13% accounted by those individuals that disagreed or who chose a neutral response.

Regarding the faculty from bachelor degree granting programs, 54% agreed and 31% strongly agreed leaving 15% that were neutral. None chose the option “disagreed” for this question.

When answering Question #5, “The faculty of my program participate in yearly IPE Initiatives”, 30% of the associate programs strongly agreed, meanwhile, 28% agreed. Those who chose the disagreed response was 17%. Twenty-three percent accounted for the neutral responses. Lastly, a minimum of 2% of the participants chose the not applicable option.

Mentioning the bachelor degree faculty, 62% strongly agreed, and 30% agreed and 8% answered neutral. None from this population chose the disagree, strongly disagree, or the not applicable options.

Regarding Question #6, “The faculty of my program meet with other healthcare professionals to develop IPE curricula on a semi-yearly basis”, the responses of the associate faculty who chose the strongly agreed was 20% and for those who agreed were 35%. When viewing the responses for the disagreed category, 25% chose this response, while 7% of the participants replied with a strongly disagree. Those who chose a neutral response were 10% of associate faculty and 3% chose the not applicable option.

For the participants related to bachelor programs, 23% strongly agreed and 38% agreed. 23% of participants also disagreed and 8% chose neutral as an answer. One (n=1) member did not answer the question and left a blank response.

When asked question #7, “My program curriculum participates in IPE initiatives that meet CODA standards”, associate level programs ranked highest in the strongly agree and agree categories. Fifty percent of respondents 50% strongly agreed and 30% agreed with the statement. Ten percent chose the neutral response. Five percent disagreed and 3% strongly disagreed. And 2% picked not applicable.

All members from bachelor programs either strongly agreed or agreed with this statement. Seventy seven percent accounted for the strongly agreed category and 23% agreed.

Question #8 pertained to the number of hours that a program includes IPE initiatives. Upon viewing the responses, most participants from the associate granting programs chose between the range of 1-4 hours per semester or more than four hours per semester. With 37% accounting for the 1-2 hours per semester category.

For this statement, respondents from the bachelor degree programs chose only from the first three categories, with 84% accounting for its highest responses in the “more than 4 hours per semester” category.

For question #9, “Please select which types of IPE initiatives your program participates in”, respondents were allowed to pick from one or more of the following 7 options: clinical care, including rotations outside of dental, simulations to include patient simulations, didactic lectures, case studies, team-centered projects, none, and other. Associate degree participants responded with case studies was the most favorable IPE

activity represented by 23%, followed by didactic lectures at 21% and team centered projects at 20%.

As for responses from the bachelor degree faculty, team centered projects together with didactic lectures ranked highest with 22% followed case studies at 20% as the most carried out IPE activity in their programs.

Finally, when asked about the barriers their program encounters the most when implementing IPE initiatives, 57% of the respondents from the associate level program agreed that time was a factor in not incorporating IPE initiatives into their programs. The second most reported response was by this group were resources, indicated by 20%. Seven percent of the faculty answered none followed 5% selecting support.

Similarly, 77% of respondents from a bachelor program also ranked "time" highest as a barrier when implementing IPE. The least barriers chosen were resources at 7% and knowledge and "other" with an open response of "My program is very supportive of IPE initiatives", which both had an 8% percent rate.

DISCUSSION

The data revealed that 53 out of the 307-faculty responded to the survey, which was not a significant sample size of the targeted population and a 17% response rate. All program faculty that participated in the survey were related to either an associate or bachelor degree granting program. As with the Bagge, Tolle, and Ferguson-Inglehart studies, program directors and faculty from associates level programs were most receptive to answering surveys and providing feedback than their bachelor counterparts. It was also noted that their responses varied throughout the survey.

Both groups felt favorable when asked if they were supported and given the necessary resources needed to provide their students with IPE experiences. This was reflected by the high percentages provided in the agree and strongly agree categories. This was not the case in the Tolle study. When compared to the bachelor degree programs, associate degree programs were shown to lack in participation when it came to implementing IPE activities. These faculty voiced that they lacked both the resources and the faculty to implement IPE into their program curricula.[7] As mentioned previously, this may be related to the number of faculty employed in these programs and the lack of knowledge and training in IPE within the faculty. Additionally, associate level programs have different objectives when compared to those from bachelor level programs. Associate level programs are more inclined on preparing students to be competent in clinical skills rather than collaborative skills.

In the area of supporting and encouraging their students to work in diversified environments, both groups' percentage rates were high in the strongly agree and agree categories. The high percentages can infer that faculty are rather confident in fulfilling these requirements and feel secure that they are providing these experiences and training to students in their programs. Considering that none of the two groups chose to disagree, strongly disagree, or not applicable, this can further reveal that most faculty from this study are providing the needed support for their students to function in diverse environments.

Faculty from both the associate level group and the bachelor level group had a high percentage when it came to either agreeing or strongly agreeing to equipping their students to work in an interprofessional setting. Only 10% of the associate faculty, which is equivalent to 4 (n=4) individuals, disagreed to this statement. Because most participants responded with agree or strongly agree to this statement, it can support that most of the faculty are in fact

including an IPE component into their program curricula. Furthermore, the survey data reveals that their students are trained in IPE initiatives and are prepared to work in the interprofessional setting upon graduation. To further confirm these results, three of the previous studies revealed that many program directors and program faculty agreed that IPE and IPC increase students' communication skills, especially when engaging with patients and with other healthcare providers, increased confidence when working with other healthcare providers in a collaborative professional setting, students' ability to problem solve and to provide comprehensive care, and lastly, positive attitudes towards collaborating with other healthcare providers. These are all skills required to be an effective collaborative team member and work within an interprofessional environment.

When asked if faculty of their programs participate in yearly IPE initiatives, associate faculty scored slightly lower than their bachelor counterparts regarding the agree category and substantially lower in the strongly agree category with a 32% difference from the bachelor program faculty. While those from the bachelor degree related programs were mainly secure when answering if they meet yearly IPE initiatives with a percentage of 62% in the strongly agree category. Those subjects related to the associate degree programs varied in their responses. Associate degree granting programs also answered in the neutral, disagree, and not applicable sections more when compared to the bachelor degree programs. These results can imply that there is either no participation or a lack of participation from associate program faculty from this study participating in yearly IPE initiatives. Again, associate level programs may not have the appropriate resources or manpower to implement IPE initiatives into their programs which may have prompted them to respond the way they did.

Although when responding to the question asking if program faculty are meeting with other healthcare professionals to develop IPE curricula on a semi-annual basis, about half of associate members agreed that their faculty are meeting this requirement. This could suggest that although these faculty may have scored low in participating in yearly initiatives, they are putting more effort into collaborating with other healthcare professionals more often to develop IPE curricula. Faculty from the bachelor group answered similarly when it came to disagreeing and strongly agreeing with the statement, but many of the respondents agreed. Only one participant did not answer the question and left this question blank.

In asking if program curriculum participates in IPE initiatives that meet the CODA standards, again, the associate level members provided answers for all six categories. Respondents from the associate degree programs favored both the agree and strongly agree categories with 50% strongly agreeing and 30% agree to the statement. The same was true of the bachelor level programs. All thirteen (n=13) respondents collectively ranked high in both the agree and strongly agree options. This suggests that both faculties agree that their programs are following and referring to the CODA standards when implementing IPE activities into their curriculum.

Referring to the amount of time the program curriculums include IPE initiatives, the associate level program members scored higher in categories labeled 1-2 hours per semester and 3-4 hours per semester when compared to the bachelor program faculty. However, in the more than 4 hours per semester option, the faculty from bachelor program ranked 84% when compared to 30% accounting for the associate group. These results indicate that faculty of both programs provide IPE initiatives at minimum of 1 hour per semester, but oftentimes exceed that within their program curricula. When compared to the Tolle study, the time that

IPE initiatives were being implemented were 1-4 hours per week, where most of the respondents accounted for 1 hour per week.[7] This can suggest that dental hygiene programs are incorporating IPE into program curricula more frequently. A significant point to consider.

As for the top three IPE activities implemented in program curricula, both populations consistently chose between case studies, didactic lectures, team projects, followed by clinical care and patient simulations. Based on the previous studies, case studies, which are known to be a favorably common activity amongst dental hygiene programs, accounted for 23% of the associate faculty, making this the most implemented activity within their programs, with didactic lectures falling in second and trailed by team centered projects for third. For the faculty related to bachelor degree programs, the data revealed that team centered projects together with didactic lectures ranked at 22% as their most implemented IPE activity followed by case studies at 20%. The "other" option allowed participants to include specific IPE initiatives that were not otherwise offered. Activities noted by associate faculty were: educating Nursing Students on campus about oral care needs of patients in the hospital setting; service events; community health fairs/health screenings; work with other programs within the college such as teaching medical assisting students to apply Fluoride Varnish; teaching CNA's in skilled nursing care facilities about denture care; working with students in medical schools about intraoral exams; clinical interactions in community based medical facility that included dental; and finally, interactive program with other allied health students sharing of patient care information. These responses seemed more like true IPE activities since many of them required students from different healthcare programs to work together to provide patient care. Moreover, it indicated that the associate faculty that provided these answers seemed extremely knowledgeable in IPE despite studies showing a

lack of participation in IPE. Faculty from the bachelor programs did not provide such detailed responses. Previous studies indicated that that most common type of IPE activities implemented in hygiene programs were case studies, on and off clinical rotations, and volunteer activities. In this study, activities mainly chosen were case studies, team centered projects, and didactic lectures.

Concerning the issues of citing barriers to implementing IPE, as was the case in the previous literature review, both program populations reported time as a common theme. Fifty seven percent accounted for associate degree programs and 77% for bachelors. Pertaining to associate level programs, 20% named resources, 7% chose none and 5% chose support as barriers. Bachelor programs chose resources at 7%, while knowledge and other which indicated one participant stating that "My program is very supportive of IPE initiatives" with both ranking a percentage of 8%. Less common responses amongst both faculties were "knowledge" "unsure", "all of the above", "other" and "cooperating sites".

CONCLUSION

Associate and bachelor granting programs were consistent with rating high in the "agree" and "strongly disagree" categories for most of the survey questions. Results indicate that components of IPE are being incorporated at a minimum and programs are referencing the CODA standards for guidance. It further reveals that students are being trained and prepared to work in diverse and integrated workplace settings upon graduation and that faculty are taking initiatives to participate in IPE and are collaborating with other healthcare faculty to develop IPE curricula. Despite, time being a theme for most dental hygiene

programs, the study disclosed dental hygiene programs acknowledge the importance of IPE and are incorporating the same IPE activities into their programs.

Some limitations of the study were the type of program faculty that participated in the study. Many faculties varied in their definition of what IPE is and what activities they considered IPE related. The level of staffs' knowledge and experience in IPE also varied. And time and presence of faculty could have limited the study and response rate.

In the future, recruitment of faculty and administration from master's program will be beneficial. Possibly sending the survey out in the middle of the semester rather than the end. Design future questions on diverse work environment to be open questions to get more accurate data on the specific activities or experiences employed by faculty and how staff is monitored for this initiative. And instead of barriers to IPE, ask faculty to offer possible solutions to implementing IPE in the dental hygiene curricula. Lastly, continue with a longitudinal study to see if IPE activities increase over time.

Appendices

Appendix A: Informed Consent Letter

The University of New Mexico Health Science Center

Consent and Authorization to Participate in Research Study

STUDY TITLE

Analysis of Interprofessional Education Inclusion Within U.S. Dental Hygiene Programs' Curricula

Dear Prospective Participant,

Professor Robin Gatlin, in collaboration with her team, is conducting a research study about Interprofessional Education (IPE) within U.S Dental Hygiene Programs at the University of New Mexico.

You are receiving this email because you are a program director or faculty member in a dental hygiene program.

The purpose of this research study is to gather information on the implementation of IPE activities in dental hygiene programs and if program faculty are incorporating these

components into their curricula. Additionally, the study will identify the types of activities as well as if these activities meet the CODA standards.

There are no risks involved in this study. The information you provide will help identify any barriers that prohibit IPE activities and find solutions to incorporate more of this component into dental hygiene curriculums. Your feedback and opinions are valuable and can assist future researchers with suggestions on how to include more IPE experiences for students and faculty in dental hygiene programs across the country.

You do not have to be in this study. Your decision to be in any study is completely voluntary. By taking the survey, you will acknowledge your participation. This study will involve a series of 10 questions and will take no longer than 5 minutes to complete. The Principal Investigator of the study has chosen a setting that does not allow names and emails to be gathered which makes this survey anonymous.

If you feel you understand the study and would like to participate, please click on the link below to begin the survey.

Survey Link

If you have questions prior to participating, please contact the HSC Human Research Protections Office at (505) 272-1129. You may also reach the Principal Investigator, Robin Gatlin at (505) 272-0838 or by email RobinG@salud.unm.edu.

Thank you for your time,

Robin Gatlin, RDH, MS, Principal Investigator

Assistant Professor, Department of Dental Medicine, Division of Dental Hygiene, University of New Mexico

Phone: (505) 272-0838

Email: RobinG@salud.unm.edu

Team Member:

Jennifer Pacheco, RDH, MS Candidate

HRRC ID # 23-140

Appendix B: IPE Survey

1. Please indicate whether your program grants a (n)

    - Certificate
    - Associate's degree
    - Bachelor's degree

2. My program is supportive of IPE initiatives and provides resources to assist faculty during student IPE experiences.
    - 1=Strongly Agree
    - 2=Agree
    - 3=Neutral
    - 4=Disagree
    - 5=Strongly Disagree
    - 6=Not applicable

3. Faculty and staff support and encourage their students to work in diversified environments.
    - 1=Strongly Agree
    - 2=Agree
    - 3=Neutral
    - 4=Disagree
    - 5=Strongly Disagree

- 6=Not applicable

4. Upon graduation, my students are equipped to effectively work in an interprofessional setting.

    - 1=Strongly Agree
    - 2=Agree
    - 3=Neutral
    - 4=Disagree
    - 5=Strongly Disagree
    - 6=Not applicable

5. The faculty of my program participate in yearly IPE initiatives.

    - 1=Strongly Agree
    - 2=Agree
    - 3=Neutral
    - 4=Disagree
    - 5=Strongly Disagree
    - 6=Not applicable

6. The faculty of my program meet with other healthcare professionals to develop IPE curricula on a semi-yearly basis.

- 1=Strongly Agree
- 2=Agree
- 3=Neutral
- 4=Disagree
- 5=Strongly Disagree
- 6=Not applicable

7. My program curriculum participates in IPE initiatives that meet CODA standards.

- 1=Strongly Agree
- 2=Agree
- 3=Neutral
- 4=Disagree
- 5=Strongly Disagree
- 6=Not applicable

8. To what extent does your program curriculum include IPE initiatives?

- None provided
- Less than 1 hour per semester
- 1-2 hours per semester
- 3-4 hours per semester

- More than 4 hours per semester

9. Please select which types of IPE initiatives your program participates in:
    - Clinical Care, including rotations outside of dental
    - Simulations, including patient simulations
    - Didactic lectures
    - Case studies
    - Team-centered projects
    - None
    - Other: _____

10. The barrier my program encounters the most when implementing IPE initiatives is:
    - Time
    - Resources
    - Support
    - Knowledge
    - None
    - Other: _____

References

1. Casa-Levine C. The Value of Interprofessional Education: Assessing the Attitudes of Dental Hygiene Administrators and Faculty. J Dent Hyg. 2017 Dec;91(6):49-58. PMID: 29378806.

2. Bagge JR, Harbaugh TC, Tabora IG, Aponte MA, Hakobyan A, Johnson DL. Dental Hygienists' Interprofessional Education and Collaboration Experiences: A survey of current behaviors and attitudes. J Dent Hyg. 2021 Aug;95(4):32-40. PMID: 34376542.

3. Formicola AJ, Andrieu SC, Buchanan JA, Childs GS, Gibbs M, Inglehart MR, Kalenderian E, Pyle MA, D'Abreu K, Evans L. Interprofessional education in U.S. and Canadian dental schools: an ADEA Team Study Group report. J Dent Educ. 2012 Sep;76(9):1250-68. PMID: 23101133.

4. Interprofessional Education Collaborative. (2016). Core competencies for interprofessional collaborative practice: 2016 update. Washington, DC: Interprofessional Education Collaborative.

5. Commission on Dental Accreditation. Accreditation standards for dental hygiene education programs. 2016. Available from: http://www.ada.org/-/media/CODA/Files/2016 dh.ashx
Google Scholar

6. Danielle Furgeson, Marita Rohr Inglehart. Interprofessional Education in Dental Hygiene Programs and CODA Standards: Dental Hygiene Program Directors' Perspectives. American Dental Hygienists' Association Apr 2017, 91 (2) 6-14;

7. Susan L. Tolle, Marlo M. Vernon, Gayle McCombs, et al. Interprofessional Education in Dental Hygiene: Attitudes, barriers, and practices of program faculty.
American Dental Hygienists' Association. 2019 April; 93 (2) 13-22.

8. Okeke, Chiamaka. The Role of Interprofessional Education in Dentistry: A Student Narrative. Health, Interprofessional Practice and Education. 2020; 4.

9. Ferguson D, Kinney JS, Gwozdek AE, Wilder R, Inglehart MR. Interprofessional Education in U.S. Dental Hygiene Programs: A National Survey. J Dent Educ. 2015 Nov;79(11):1286-94.PMID:26522633.