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The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Faculty, Practicing Dentists and Industry Professionals in the Dominican Republic

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THE ACQUISITION OF DENTAL COMPETENCIES AND CLINICAL SKILLS: PERCEPTIONS FROM STUDENTS, FACULTY, PRACTICING DENTISTS AND INDUSTRY PROFESSIONALS IN THE DOMINICAN REPUBLIC

by

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AQUISITION OF DENTAL COMPETENCIES AND CLINICAL SKILLS: PERCEPTIONS FROM STUDENTS, FACULTY, PRACTICING DENTISTS, AND INDUSTRY PROFESSIONALS IN THE DOMINICAN REPUBLIC

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The Dominican healthcare system faces many challenges, and dental education is not an exception. The lack of competencies established for dentistry is one of the most critical challenges that dentistry faces. There is no way to guarantee that all dentists receive the same quality education with no standards and lack of competencies. Previous research has revealed that the competencies achieved by dental students determine the way such students develop their professional practice in the future as dental graduates (Alcota, De Gauna, & González, 2016). However, there is a lack of shared language observed in dental education around the world. Not all countries have determined a set of competencies to be taught within university dental schools.

Therefore, this study examines the perceptions of multiple stakeholder groups regarding the current curriculum used in dental schools within the Dominican Republic (DR), and how well it helps students acquire critical competencies and clinical skills. The research design was a quantitative approach using online and hard copy surveys and a convenience sample method. My respondents included 400 participants: 153 undergraduate dental students attending nine DR's universities, 108 dental graduates, 153 faculty members, and 42 industry professionals.

The 2008 "American Dental Education Association (ADEA) Competencies" were the primary guide for developing the surveys. ADEA Competencies were translated into Spanish and were used as part of the investigations. Other items from other countries' dental competencies and clinical skills were reviewed. Cronbach's alpha revealed internal validity: from 0.989 to

0.993. The data were analyzed using descriptive statistics, summary scores, a univariate ANOVA, and Multiple Linear Regression (MLR). Models with different sets of predictors were evaluated using model fit statistics.

This study revealed a general agreement between the four stakeholder groups regarding acquiring competencies and clinical skills by DR dental students. Dental student's overall average preparedness to practice dentistry effectively was fairly good (M=4.96, SD=1.07; on a 6.0 scale). Despite these findings, significant differences were found regarding the competencies, clinical skills, program components, and university participants's origin. There were several strong predictors of competencies and clinical skills acquisition. Regarding the students, the competencies predictors were: the clinical practices of Operative Dentistry, the predictors for Clinical Skills acquisition were related to the university, the clinical practices in Oral Surgery, and the preclinical courses of Prosthodontics. Regarding the practicing dentists, the predictors for competencies were: the preclinical courses of Dental Anatomy, Pediatric Dentistry, Endodontics, and the clinical practices of Oral Surgery, that were also predictors for clinical skills acquisition. Regarding the faculty, the predictors for competencies and clinical skills were: the clinical practices of Prosthodontics and Periodontics. Overall, the findings revealed that the university attended was a predictor for competency achievement. I suggest creating both a National Advisory Board for Dental Education, and a Board of Advisors at every dental school to provide feedback to improve preclinical and clinical courses. Several topics could be considered for additional research. It could be interesting to study the differences in competency achievement by the university attended, and faculty perspectives for improving student's competency achievement and DR dental education.

This dissertation is dedicated to my children, Alejandro, Laura Gabriela, and Diego; you are the most loving and supportive persons. I also dedicate it to my parents, Hugo and Myrna, to Sara, Emmanuel, my sisters, my brother, my brother in law, and my friends for your love, support, words of encouragement, and prayers throughout this project. You were an inspiration. Because of each of you, I had the strength and courage to face challenging situations throughout these five years. Thank you for helping me to persevere throughout this challenging period of my life.

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LIST OF ABBREVIATIONS

AADR…..... American Association of Dental Research
ADA……..….. American Dental Association
ADEA…..... American Dental EducationAssociation
ADEE……..…. Association for Dental Education in Europe
AOD…….…..….. Dominican Dental Association
APEC……..…. Asia-Pacific Economic Cooperation
ASPID…..... Advanced Standing Program for International Dentists
ASPIH…..... Association for Simulated Practice in Healthcare
ATCS……..…. Assessment and Teaching of 21st Century Skills

CanMEDS…..….. Royal College of Physicians and Surgeons of Canada
CBE……..…..... Competency-based education
CCID……..….. Commission on Change and Innovation in Dental Education
CODA……..…… Commission on Dental Accreditation
COD……..…….. Dominican College of Dentists
CPR……..…… Cardiopulmonary Resuscitation
CUGH…..…… Consortium of Universities for Global Health

DDS……..…… Doctor of Dental Surgery
DESECO…..……. Definition and Selection of Competencies
DMD……..... Doctor in Medical Dentistry education
DR……..... Dominican Republic

EBD……..……. Evidence Based Dentistry
ECTS……..... European Credit Transfer System
EU……..... European Union

FOLA……..... Latin American Dental Federation

GDC……..... General Dental Council
GEO……..... Group of Dental Studies
H_A…….. Alternative Hypothesis
HEIs……... Higher Education Institutions
H_0…….. Null Hypothesis

IADR……..... International Association for Dental Research
ICT……..... Information and Communication Technologies

List of Abbreviations – Continued

INTEC……. Instituto Tecnológico de Santo Domingo
IOM……. Institute of Medicine
IPEC…… Interprofessional Education Collaborative
IRB……..... Institutional Review Board
ISTE…… International Society for Technology

MLR…….…… Multiple Linear Regression
MESCyT…….…. Dominican Ministry of Higher Education, Science, and Technology
MSP……..… Ministry of Public Health

NAEP…….. National Assessment of Educational Progress
NBDI……..... National Dental Board Part I
NBDII……..... National Dental Board Part II
NCREL……..... North Central Regional Educational Laboratory

OECD……... Organization for Economic Cooperation and Development

PBL……... Problem-Based-Learning
PUCMM……... Pontificia Universidad Madre y Maestra

RCPSCan……. Royal College of Physicians and Surgeons of Canada

SDE……... Dominican Society of Endodontics
SDI……..... Dominican Society of Implantology
SDL……... Self-Directed Learning
SDO……... Dominican Society of Orthodontics
SODOCIBUMAX…. Dominican Society of Oral Maxillo Facial Surgery
SODONI……..... Dominican Society of Pediatrics Dentistry
SODOPERIO……..... Dominican Society of Periodontics

UASD……..... Universidad Autónoma de Santo Domingo
UCATECI…….. Universidad Católica del Cibao
UCE……... Universidad Central del Este
UCNE…… Universidad Católica Nordestana
UK……. United Kingdom
UNIBE……... Universidad Iberoamericana

UNIRHEMOS…… Universidad Eugenio María de Hostos
UNPHU…….. Universidad Nacioal Pedro Henríquez Ureña
UOD……... Universidad Odontológica Dominicana
UPR…… University of Puerto Rico
US……... United States
UTESA……... Universidad Tecnológica de Santiago

VIF……. Variance Inflation Factor

WHO…….. World Health Organization
WMU…….. Western Michigan University
X^2……...……. Chi Square

CHAPTER I

INTRODUCTION

Dentistry exists from ancient civilizations, and the oldest record of the first dental practice was attributed to the Egyptians 5000 years ago. However, since its beginning, dentistry was not a formal profession. During middle age, the practice was assumed by barbers who, in addition to other services, performed bleeding and dental extractions for their clients that required a dental service. Since then, the history of dental education was impacted by transformation and continuousness as its curriculum developed throughout the years (Field, 1995). The first instances of formal dental education can be found as early as 1530, when the first textbook of dentistry was published in Leipzig, Germany (Field, 1995). The accolades started a century after publishing the first dentistry textbook, which was in 1683 when Van Leeuwenhoek recognized microorganisms in a material collected from teeth after being scrapped (Yip, & Smales, 2000). Later, in France (1728), Pierre Fauchard considered the father of dentistry, published, in a comprehensive dental textbook, that "the school of surgery needed to include dentistry" (Bishop, 2014, p. 539).

Since then, dentistry has continued to expand until the 21st century due to exponential evolution (Field, 1995). One of the significant concerns about dental education was about facing a new century, the 21st century, with its diverse challenges. The future goal was that the dental profession should contribute to the improvement of oral health for all. However, these goals have not been accomplished yet due to the different situations, one of them, the absence of a common language describing fields of competence in dentistry (Englander et al., 2013).

Dental educators worldwide are continually struggling to achieve their students meet the required skills necessary for the practice of dentistry. The gap in the achievement of required

competencies between dental graduates from different countries has continued to grow over the past decades. This gap consists of differences in accreditation and licensure requirements in dental education worldwide; there is also a lack of congruency of different curriculum approaches required for a global milieu (Donaldson et al., 2008). Therefore, not all dental graduates can insert as fast as they wish into the labor market. Due to the vital role universities play within society, there is an international worry about transforming academic programs to ensure graduates are prepared for a globalized world (Noddings, 2007; Perez Gomez, 2007).

This study aimed to contribute to the quality of dentistry education in the Dominican Republic (DR) by shedding light on DR dentists' preparedness before graduation and their acquisition of dental competencies and clinical skills. This study gathered perceptions from multiple stakeholder groups on how well the current curriculum used in dental schools within the DR helps students acquire critical competencies and clinical skills. This study can serve as the first step in the definition of needed DR core competencies for dentistry. Such competencies can help protect the public from unqualified health practitioners and enhance dentistry by ensuring that DR dental education can meet international standards.

Background

Globalization has made higher education institutions (HEIs), especially those dedicated to health professionals' teaching, face constant challenges. One of these is the continual evolution of technology and science the world is experiencing. The expectation is that health graduates can be more competent now than in the past. As a result, health programs are called to incorporate into their curriculum structures new requirements that assure their graduates become multi-skilled individuals, and a set of specific competencies are necessary to enable students to face the 21st Century and its constant demands (Alcota, De Gauna, & González, 2016; Chan, Fong, Luk, & Ho, 2017; Crick, 2008; Noddins, 2007; Voogt & Roblin, 2012). Also, the addition of specific

competencies within a curricular approach is specifically crucial in dentistry, as various organizations and institutions work to strengthen the future of the dental profession (Alcota et al., 2016).

Many associations related to dentistry suggest dental programs include competencies as part of the abilities their dental graduates acquire during dental education. For example, in Europe, the Association for Dental Education in Europe (ADEE, by its initials in English) highlighted ethical conduct, moral codes, and social skills. In the US, the American Dental EducationAssociation (ADEA) and the American Dental Association (ADA, 2016) also developed competencies, which incorporate ethical and professional behaviors, such as "fairness, integrity, and responsibility," and recommended that all American dental schools should integrate these competencies into their educational programs (ADEA, 2012; Alcota et al., 2016). Other dental associations took similar actions in other countries, such as the Australian Dental Council in 2010, the Association of Canadian Faculties of Dentistry in 2007, and the Dental Council of New Zealand in 2012. The competencies were similar, having some variation due to their cultural contexts (Hsu et al., 2015). Other authors recommended that dental students acquire other abilities, such as motor skills observed, such as manual dexterity, along with these core competencies. Students also need to acquire broad basic knowledge to base their treatment decisions on scientific evidence (known as evidence-based dentistry, EBD). Along with other competencies, they need to develop ethical conduct, demonstrate social responsibility, and integrate moral values observed in treating their patients respectfully (Dahan & Bedos, 2010; Elani et al., 2013; Hendrickson et al., 2006; Ismail & Bader, 2004; Lewin, Olson, Goodman, & Kokotailo, 2004; Lugassy et al., 2018; Qualtrough, Whitworth, & Dummer, 1999; Schönwetter, 2006; Steiner-Oliveira et al., 2008). The classroom environment, the school's dental laboratories, the pre-clinic practices with simulated situations, as well as dental clinic practices in real-life

situations, are the perfect learning environment to achieve competencies (Dahan & Bedos, 2010; Elani et al., 2013; Hendrickson et al., 2006; Ismail & Bader, 2004; Lewin et al., 2004; Lugassy et al., 2018; Qualtrough et al., 1999; Steiner-Oliveira et al., 2008).

One form of education which attempts to help students acquire such skills is competency-based education (CBE). CBE has four characteristics: (a) learner outcomes focusing on market requirements, (b) modules organized in sequences, (c) students advancing at their speed, and (d) students evaluated in real settings (Albino et al., 2008). The main goal of a CBE curriculum is the acquisition of competencies aligned with what the profession, as well as the labor market, requires of graduates (Johnstone & Soares, 2014). Within health care, CBE starts with a careful reflection of the competencies needed by health care professionals to help address the health requirements of a given country (Gruppen et al., 2012; Johnstone & Soares, 2014). In the US, CBE was introduced in 1995 by American Dental Education and the Commission on Dental Accreditation (CODA) (Albino et al., 2008). In 1997, CODA defined it as the preferred approach used within their dental programs because it increases students' learning (Eaton et al., 2008; Licari & Chambers, 2008). In 2008, CODA reviewed its pre-doctoral criteria and further established CBE as the suggested curricular structure used to educate those becoming general dentists (Albino et al., 2008).

CBE-focused dental curriculum coherently combines all competencies that students must learn. It assures that all student performances are sustained by theory in bio-medics principles, clinical and social capacities, and motor abilities (Albino et al., 2008). CBE's learning objectives must be explicit, and evaluation must be flexible, emphasizing several rules, such that dental students must demonstrate competency attainment, progressive learning, and the ability to follow their educational development (Gruppen et al., 2012; Johnstone & Soares, 2014). Although CODA recommended integrating a CBE curriculum as the preferred curricular approach to help

students in the acquisition of the competencies, the organization acknowledged that there are differences among US dental schools' curriculum approaches, and not all incorporate CBE education (Haden et al., 2006). However, all American schools of dentistry accredited by the ADA, in order to resolve these differences, must meet certain principles, such as including the teaching of critical thinking as part of the teaching strategies, that students must become into lifelong learning individuals, and, lastly, dental education should integrate the technology the dental profession includes routinely during the practice of dentistry (Haden et al., 2006). Finally, students need to become self-directed learners (Haden et al., 2006).

According to CODA (2008), dental curricula must include a humanistic structure where both professors and students commonly interact (Haden et al., 2006). Clinical environment and community service practices are high scenarios to help students achieve this interaction. In 2004, CODA added new expectations, such as the competency in treating medically compromised patients (Clemetson, Jones, Lacy, Hale, & Bolin, 2012).

CODA (2008) also suggested that dental education curricula include evidence-based dentistry (EBD). According to Faggion and Tu (2007), students who are taught with EBD theories and who have the opportunity to do community service practices as part of their dental education perform better and acquire specific social competencies that are needed to improve the quality of health care for all citizens, than students who are not engaged in such classroom training and clinical practices (Faggion & Tu, 2007). According to the ADA, EBD is a methodology that integrates into oral health care systematic assessments of clinically pertinent scientific data by linking the patient's oral and medical state with the patient's needs (Haden et al., 2006).

Many authors affirmed that dental students must acquire ethical and moral values (Hood, 2009; Taleghani et al., 2004). Acquiring such competencies help students base their clinical decisions on a broader set of considerations, such as ethical issues, rather than only on biological

principles and technical proficiency, as it was the tradition commonly; dental students also need to acquire the capacity of social sensitivity during treatment planning and execution (Hood, 2009; Taleghani et al., 2004). A CBE curriculum that incorporates EBD and service-learning strategies helps students acquire such abilities; however, obstacles to implementation exist (Haden et al., 2006).

One obstacle observed is the lack of a shared language describing fields of competence in the health care professions and the specific competencies critical to such professionals' ongoing development (Englander et al., 2013). This lack of shared language observed in dental education worldwide is because not all countries have a set of competencies taught within their university dental schools, and the curriculum approach is different by each dental program (Englander et al., 2013; Haden et al., 2006). In the US, the ADEA (2017) and the ADA (2011), proposed key competencies for dental graduates as an essential guide for dental schools. No such set of national Dominican dental competencies exist to guide the dental schools' work in the DR.

The DR has the National System of Higher Education, Science, and Technology, created with Law 139-01, which gives authority to accredit, regulate, and supervise all Dominican HEIs. The Dominican Ministry of Higher Education, Science, and Technology (MESCyT by its acronym in Spanish) rules the entire Dominican educational system. The total population of the DR is about 10.7 million, 80.3% of whom live in urban areas of the country (Santander Trade Portal, n.d.). The DR is territorially divided into 32 provinces with a total area of 8,442 square meters (Santander Trade Portal, n.d.; Thomas, 2016). In 2018, MESCyT recognized 51 HEIs offering diverse educational programs.

Only three such HEIs have specific competencies and established them by law as a requirement for students during their education. These programs are Civil Engineering, the Medical Program, and the Nursing program. Out of 51 HEIs, only one is dedicated to the teaching

of dentistry exclusively, and 11 teach dentistry and other professional programs. These dental programs graduate approximately 200 dental professionals per year (Thomas, 2016). However, each Dominican dental school decides its curricular structure, as well as its teaching strategies. Each Dominican school of dentistry has to be approved by MESCyT to teach dentistry; however, MESCyT has not established dental competencies that a dental graduate must achieve to practice dentistry (Taveras, 2007; Thomas, 2016). Each dental program uses its criteria to produce dental graduates they believe can meet their patients' oral health care needs. Currently, many Dominican dental programs are in the process of changing their curricular structures to CBE, but not yet as a requirement established by the MESCyT. Also, a National project conducted by the Vice Presidency, MESCyT, and the Dominican Ministry of Public Health (MSP) aims to establish criteria that will rule all Dominican health professions and create a national system of qualification for all Dominican health care professions.

Problem Statement

The primary purpose of a dental school is to graduate a general practitioner who has the aptitude to practice autonomously without others' supervision (Hendricson et al., 2008). This autonomous practice is only performed by a competent general dentist who can collect information when completing a medical record effectively, can make accurate decisions based on impartially evaluating a patient’s data, can assess results of treatment decisions, and can execute a patient’s treatment by him/herself (Hendricson et al., 2008). A general dentist is a health professional dedicated to the oral cavity, who can also work in combination with affiliated dental professionals, such as dental specialists, dental hygienists, dental assistants, dental laboratory technicians, and other caregivers (Albino et al., 2008).

Dental education exposes the general dentist to extensive knowledge of biochemical and clinical content (Henzi, Davis, Jasinevicius, & Hendricson, 2007). Likewise, dentists need to

learn to communicate with others effectively and develop social skills (Albino et al., 2008). They need to effectively use technology, exhibit professional behavior guided by an ethical code, and demonstrate critical thinking and problem-solving abilities (Hendricson et al., 2008). During dental education, the skills required are called dental competencies, with their mastery demonstrated when practicing autonomously, without supervision by others, and without causing harm to a patient (Albino et al., 2008; Lugassy et al., 2018; Steiner-Oliveira et al., 2008). These competencies comprise the ability to comprehend situations, demonstrate critical thinking capacity, competency, proficiency in self-directed learning, problem-solving skills, moral values, and practical and mechanical abilities (Albino et al., 2008).

There is evidence that the professional attitudes developed by health care students determine the way such students develop their professional practice in the future (Alcota et al., 2016). The early acquisition of these attitudes during dental school is essential so that graduates can practice professionally and ethically, delivering the best dental care to patients. The ADA-adopted competencies are intended to guide higher education faculty regarding essential entry-level competencies to practice as a general dentist within the United States (US) and Puerto Rico; also, they accept dentists who graduated in Canada (Haden et al., 2010). These competencies are the basis for the accreditation standards used in dental education programs approved by the ADA, have driven curriculum changes in US dental programs, and are considered some of the best in the world (Albino et al., 2008). Indeed, the US is attractive to many foreign dental students, and such international dentists are attractive to the US due to several factors. The increasing population of immigrants requires healthcare professionals with multilingual skills (Allareddy et al., 2014; Pannu et al., 2013). The aging US population also requires more dentists, as older populations need more oral health care services. Lastly, many older dentists are retiring soon (Allareddy et al., 2014; Pannu et al., 2013). The need for additional US dentists offers foreign dental schools an

opportunity to prepare their students to meet all competencies required by other countries, such as the US (Pannu et al., 2013). Until recently, to practice in the US, a foreign-trained dentist took two exams called National Dental Boards (NBD I and NBD II); these exams are required for all US dentists. From July 2020, this exam now consists of one Board.

Along with this, the licensure procedure includes other requirements varying from state to state because international dental programs do not currently have an accreditation approval for all states within the US (Allareddy et al., 2014; Pannu et al., 2013). Some options for foreign dentists include obtaining a complete US dental degree in one of the 25 dental programs that accept international dentists. They can do an abbreviated training in an advanced standing program called Advanced Standing Program for International Dentists (ASPID), with such programs resulting in the Doctor of Dental Surgery (DDS) degree. However, the DDS degree obtained does not give automatic licensure to practice dentistry, whereby graduates still need to take the boards (Allareddy et al., 2014; Pannu et al., 2013). Other options for a foreign dentist are programs developed for full-time faculty members who are foreign-trained, which allows them to obtain a DDS or a Doctor in Medical Dentistry education (DMD) (Allareddy et al., 2014; Pannu et al., 2013). These types of programs may have some variations conditioned by each dental school and usually adapted to meet the necessities of the foreign dentist following this option (Allareddy et al., 2014; Pannu et al., 2013). The ADA adopted these requirements to allow foreign dentists to practice in the US because there is a unique variation in the different dental programs' curricular structures from country to country. Also, they need to protect patients from unqualified dentists.

In the US, Canada, and some dental schools in Mexico, undergraduate students take only “pre-dental” courses as part of their bachelor’s degree. These are followed by four years of graduate instruction in a dental school (Donaldson et al., 2008). In the US, these four years of dental education are divided, with the first two years concentrated on the acquisition of pre-

clinical competencies and didactic teaching, and the final two years being primarily clinically-based. Dental students take two mandatory exams until July 2020. The National Board Dental Examination (NBDE) is divided into two parts; NBDE part I is taken at the end of the second year of dental education, and the NBDE Part II is taken during the third or fourth year (Roudsari, 2018). Most states also require that dentists pass a regional board exam, and after completing this exam, dentists become qualified to receive their dental license (Roudsari, 2018). However, in Europe, Japan, India, and many Mexican schools, dental education generally takes five years within a bachelor's degree (Donaldson et al., 2008). The DR is similar to other Latin countries where students apply to study dentistry right out of high school. Students complete their dental school as part of their bachelor's degree, taking four to six years.

Likewise, two approaches for dentistry dental schools exist globally. The odontology approach, which is the leading approach in North and South America, Northern and Western Europe, Japan, India, and Australia, sees dental education as a stand-alone discipline. The second, the stomatology approach, associates dentistry as a field of medicine. This approach is recognized in other parts of Europe and China (Donaldson et al., 2008). The DR schools of dentistry assume these approaches too. With 10 HEIs implementing the odontology approach and one school using the stomatology approach in its two campuses. The total years of dental education vary between Dominican dental schools from four to six years (Taveras, 2007; Thomas 2016).

The dentistry practice in the DR is ruled by the MSP, with each dental program approved by the MESCyT and reevaluated by them every five years. Recently, every dental clinic within the DR's schools of dentistry had to achieve a new qualification obtained by inspecting its facilities and completing several processes and documents. Obtaining such certification indicates that this dental clinic meets the standards to ensure patient safety. After graduation, Dominican dentists need to obtain their license called Exequatur, which allows them to practice. Obtaining

such a license is not based on any written or clinical exam, just evidence of graduating with a dental degree. In December 2018, the Dominican Association of dentists was converted into The College of Dentistry (CDO by its acronym in Spanish). The CDO's mission is to aid the MSP in regulating the national practice of dentistry and promote DR continuing education, as well as the best practices of DR dental exercise. Currently, the MESCyT is assessing DR's dental schools to understand each Dominican dental program organization.

The number of Dominican dentistry students experienced rapid growth in the past decade. For example, the first dental school in the DR was founded in 1900. From that date until 2005, it had 3,209 dental graduates (Taveras, 2007). For comparison, a newer private university founded in 1988 has already graduated over 2,621 dental professionals (personal communication, October 17, 2019). If we compare the number of graduates from both dentistry schools, the rapid growth of dental graduates within the DR is evident. This growth raises the question of whether all dental students graduate with all the needed competencies, whereby such rapid enrollment growth might affect the quality of education offered across DR dental schools (Thomas, 2016).

Since the creation of the first Dominican school of dentistry, dental teaching is eminently practical, and this situation has not changed over time (Thomas, 2016). Thus, the teaching of dentistry in the DR is more skill-based than competency-based. A skill-based approach promotes the development of dental students' cognitive and psychomotor skills via training and knowledge acquired through simulated settings and in real situations with patients. Although this approach has many benefits for student acquisition of manual dexterity, it is still unknown whether this translates into actual competencies or meets the international standards. Within the DR, it is not mandatory to take any continuing education courses once working as a dentist, even though dentists are encouraged to do so. These issues affect the quality of the dental services offered in the DR (Thomas, 2016).

Even though there are many dental graduates in the DR, there has been no national study that explores how dental schools promote the acquisition of ADA-required competencies. Such a study could help set standards to enhance dentistry's teaching and practice and protect patients from being attended by an unqualified dentist. Although MESCyT approves each dental program offered in the DR, to this date, each dental school determines and declares its outcomes graduates need to meet. With no national dental competencies, each school has its preferred curricular structure. There is also no information on how the different DR schools of dentistry implement a CBE curriculum to help students acquire needed competencies. My study focused on competencies, as suggested by the ADA, and the clinical skills essential for effective general dentistry practice. The data collection about these issues from stakeholders is an effective way to help the further professionalization of DR dentistry. This information can be useful to each university and the MESCyT to currently give them a current background of the Dominican dental situation. It is also the first step towards a future definition of the core competencies required by all Dominican dental students before graduation.

Purpose Statement

This study aimed to gather perceptions regarding how well the current curriculums used in DR dental schools help students acquire ADA-required competencies and clinical skills. This research was conducted in nine DR Schools and gathered perceptions from vital stakeholders, including DR dental students, faculty, practicing dentists, and industry professionals. The final group, industry professionals, consisted of a sample of professionals, dentists or not, from throughout the DR who currently hire or supervise Dominican dentists.

Stakeholders' perceptions are an essential tool to provide DR dental school administrators and Ministry leaders a diagnostic of the DR dental situation. This study provided each dental school with specific information regarding their dental programs. It also provided information to

the MESCyT, which may assist in policy revisions to define the core competencies that must be attained by all Dominican dental students before graduation. Results from this study can help protect the public from unqualified health practitioners and enhance the practice of dentistry in the DR by ensuring that Dominican dental education meets international standards.

Research Questions

The research questions that guided the design of this study are:

1. What are the perceptions of DR dental students, dental faculty, practicing dentists, and industry professionals in the DR regarding the following:

(a) students' current acquisition of competencies and clinical skills to treat patients; and

(b) current incorporation of preclinical and clinical components, including evidence-based dentistry, community service, diverse pedagogical strategies, and incorporation of research into the dental program?

2. What are the similarities and differences between the four stakeholder groups' perceptions regarding students' current acquisition of competencies and clinical skills to treat patients, and other pre-clinical and clinical dental program components?

3. To what extent do various programs' preclinical and clinical dental program components predict the perceived acquired competencies and clinical skills?

Conceptual Framework and Narrative

Dentists are health care providers with the capacity to practice dental procedures for patients in several areas. They can practice to restore or replace decayed or missing teeth in adults, known as restorative dentistry. Pediatric dentistry refers to the practice of treating children's dental needs. Periodontics is the practice of maintaining healthy gums and preventing gum diseases. Dentists also perform oral surgeries when they extract teeth or practice minor oral surgical procedures. They perform root canal treatment in their patients, known as endodontics.

They can attend communities and individuals and plan prevention campaigns for them, known as public health. They can practice cariology, which is the practice that prevents and treats dental caries. Dentists can diagnose and prevent the malposition of teeth, called orthodontics. They are providers of primary patient care. General dentists also can offer health care to patients without referring to a specialist unless necessary (DePaola, 2008; Eaton, Reynolds, Grayden, & Wilson, 2008). A dentist must have the ability to conduct a comprehensive oral health assessment and develop an integrated treatment plan. A dentist also satisfies current public demands and provides care for a growing aging population (Eaton et al., 2008; Sanz, Widström, & Eaton, 2008).

Accordingly, ADEA, the commission on change and innovation in dental education, has proposed guidelines for US dental schools to use for best practices and curricular innovations, as well as the knowledge to be acquired by dental students (Hadenet al., 2010; Kalkwarf, Haden, & Valachovic, 2005). Others proposed new methodologies to be implemented by dental schools for curriculum enhancement, including the integration of research into dental education, the incorporation of scientific evidence into clinical practice (EBD), and community service practices (Hade et al., 2010). Similarly, the United States Commission on Dental Accreditation (CODA) suggested the integration of EBD in their revised Dental Education Program Standards. They said that graduates must be capable of judging, critically evaluating, applying, and connecting scientific literature that is associated with providing evidence-based patient care (Marshall et al., 2017). The ADEA, as well as CODA, have emphasized the need for schools of dentistry to teach EBD and for faculty to be trained on how to teach it (Marshall et al., 2017).

To this end, the conceptual framework in Figure 1 displays the main aspects of this study. The first circle represents stakeholders, including dental students, practicing dentists, faculty, and industry professionals. The box on the right top lists the skills needed to meet the varying requirements of oral health care in the 21st century. These abilities are: (a) critical thinking; (b)

problem solving; (c) self-directed learning; (d) health care promotion; (e) communication and interpersonal skills; (f) professionalism; (g) practice management and the use of informatics; (h) implementation of evidence-based dentistry; and (i) establishing and maintaining patient's oral health (Albino et al., 2008; Donaldson et al., 2008; Marshall et al., 2017; Sanz, Widström, & Eaton, 2008).

The box on the lower-left corner lists the preclinical and clinical hours. Also, it lists some curricular components, such as evidence-based dentistry, community service, innovative pedagogical strategies, and incorporation of research into the DR dental program. The boxes on the lower right corner and below offer the clinical skills identified as necessary to practice dentistry. It refers to (a) Prosthodontics, (b) Periodontics, (c) Endodontics, (f) Oral Surgery, (g) Operative Dentistry, (h) Pediatric Dentistry, (i) Public Health. (j) Cariology, and (k) Orthodontics (ADA, 1976, 1990, 1995; Ahmad, 2012; Ingle, 2009; Ireland, 2010; Pitts, 2011; Sell & Chapman, 2012). The list of definitions regarding the identified dental essential competencies and clinical skills is in Appendix A.

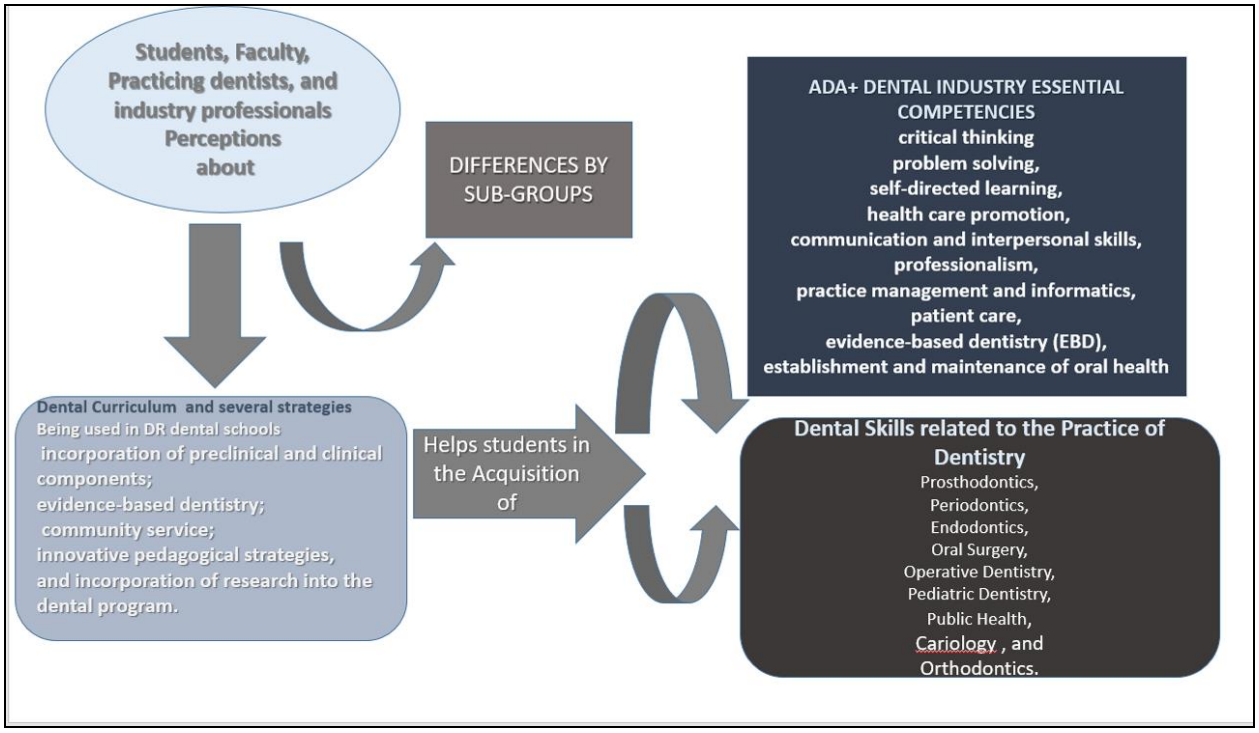

Figure 1. Conceptual frame for Reyes's (2021) study.

Overall, it was important to gather program administrators's perceptions regarding how well the current dental curricula used in DR dental schools help students with the acquisition of competencies and clinical skills. Besides, it was vital to identify if the hours dedicated to experiential learning were adequate for dental students preparation, and to learn what types of experiences recruiters find most beneficial. Likewise, it was essential to determine if dental programs implemented EBD and determine if the hours implemented in the dental programs to community service were enough.

Building a curriculum without acceptable input from industry leaders and international scenarios means that there is the potential for deficiencies in students' abilities and risking patient safety. Also, DR dental students may not be accepted in international scenarios and marketability upon graduation. Perceptions from students, dentists, faculty, and industry professionals as the

primary stakeholders provided DR dental school administrators with a diagnostic of the current DR dental situation.

Information from this study could help MESCyT to have a background of Dominican dental curriculum outcomes. This study's results are the first step to help DR schools of dentistry define the core competencies of dentistry needed. Such competencies can help to protect the public from unqualified health practitioners and enhance the practice of dentistry in the DR by ensuring that DR dental education can meet international standards.

Methods Overview

A quantitative approach was used involving online surveys or hard copy surveys. Surveys gathered perceptions from dental students, practicing dentists, faculty, and industry professionals. Because the interest was the perceptions of a broader population of dental students, practicing dentists, faculty, and industry professionals in the DR, a most useful survey method. A survey data collection process asks questions of a selected sample from a larger population to have an overall view and to generalize to the broader population (Creswell 2014; Fowler, 2009).

The surveys for this study were cross-sectional, with information collected at one point in time. An online survey instrument was sent via a google form link by e-mail to participants or hard copies through a convenience sample method. There was a slightly different version for each group of participants, generally asking the same questions from each group's point of view: students, practicing dentists, faculty, and industry professionals. The last section of the survey, program components (pre-clinical hours, clinical practices, teaching strategies, community service, research, and evidence based-dentistry), was not part of the industry professionals' survey since they lack knowledge of these variables. For this study, dental school directors in all dental schools helped distribute a survey via an e-mail link. The survey was sent to all their students about to graduate and all their dental faculty. The survey was also distributed to dental school

graduates from the past five years and industry across the DR. Practicing dentists and industry professionals were contacted by the researcher using the e-mail obtained from the professional association database or the organizations where they work directly.

Chapter 1 Closure

The literature supports the need for a standard set of dentistry competencies. The implementation of an evidence-based curriculum through experiential learning, pre-clinical and clinical settings to ensure dental graduates can face patients' oral health needs (Albino et al., 2008; Behar-Horenstein & Feng, 2017; Jacobson, 1999; Jones, 2011; Marshall et al., 2017; Qualtrough, Whitworth & Dummer, 1999). Ongoing research and evaluation of the acquisition of competencies through evaluating dental programs and their requirements are needed. Understanding the perceptions of students, faculty, graduates, and industry professionals was an excellent way to provide guidelines and suggestions regarding the current DR dental education and the achievement of dental competencies.

The acquisition of such competencies demanded by the ADA and labor market is vital in ensuring that curriculums are relevant and up to date to allow dental students to meet these expectations. In Chapter 2, a literature review for this study focuses on competencies, Competency Based-Education, characteristic of a CBE approach, frameworks of competencies in higher education required by the industry sector, and the health professions and dentistry competencies, the teaching strategies used in a CBE approach. This chapter provides an overview of dentistry in the Dominican context, including regulation and the current state of dentistry in the DR.

CHAPTER II

LITERATURE REVIEW

The acquisition of "competencies" is the primary concern of higher education institutions (HEIs) since the decades of the 70s and 80s when the industry introduced this terminology to the educational sector (Crick, 2008). More recently, some authors stated that health professionals must exhibit several competencies, such as operational, medical, and social abilities (King, 2015; Yip & Smales, 2000). Dentists and other health care providers need to demonstrate the capacity to attend patients without supervision, and assess their patients' treatment efficiently (Albino et al., 2008; King, 2015; Lugassy et al., 2018; Steiner-Oliveira et al., 2008). For dental professionals, this capacity, also known as "competency," is acquired during dental education (King, 2015). In recent years, the goal of dental undergraduate education is the acquisition of competencies and clinical skills. Many dental associations around the world recognize such acquisition as essential in dental education (Albino et al., 2008; Lugassy et al., 2018; Steiner-Oliveira et al., 2008).

This literature review starts with a definition of "competencies," specifically, the foundations of competencies in education. This section includes several approaches to competencies and various facts regarding the introduction of competencies in higher education. It provides a brief overview of competencies frameworks in higher education required by the industry sector and concludes with the competencies in the health professions and dentistry. Then, the review continues by describing the introduction of competencies in dentistry in the US, the CBE approach, and the characteristics of a CBE approach, as well as the teaching strategies for a CBE approach. Finally, since this study is located in the DR, the review includes a background of

dentistry practice in the Dominican context, including practice regulation and the current state of the art.

Foundations of Competencies in Education

Generally speaking, the word competency refers to the acquisition of significant theoretical knowledge observed in the individual as performing specific actions, such as behaviors, performance, and attitudes (King, 2015; Westera, 2001). While the term competency is thoroughly used in education and the health professions, it is not exclusive to these areas. Also, the fields of management, business administration, and the areas of supervision commonly use competencies as an essential policy in promoting the enhancement of the program's core skills so young people can adapt to globalization and the labor market needs (Millán, Ruiz, & Tirado, 2013). For some authors, competencies are complex abilities with different degrees of integration observed in individuals in a variety of situations such as individual, personal, and social life situations (Catalano, Avolio, & Sladogna, 2004).

In education, the concept of competency refers to the aptitude to achieve a complex task in a particular situation (Deakin, 2008). The complex task is associated with the acquisition of notions, knowledge, and information, such as conducting procedures, implementing methods, or demonstrating skills; it is associated with acquiring values and attitudes (Deakin, 2008; Pimentel & Reyes, 2003; Thomas, 2016). The term competency is also a synonym of expertise, and it is limited to a class of intellectual sub-skills involved in handling severe problems (Johnstone & Soares, 2014; Walker & Nocon, 2007; Westera, 2001).

Some relate competency to dynamic behavior in unusual conditions that produce rational abilities (Gutierrez & Rogoff, 2003; Rakhimova et al., 2017; Walker & Nocon, 2007; Westera, 2001). For others, it is achievement observed as team-work, self-management, and creative thinking (Esteve, Adell, & Gisbert, 2013). Others agree that competencies are human capacities

observed as an ability to perform, as well as having a piece of knowledge (Badley, 2000; Cheng & Dainty 2002; Salas-Pilco, 2013; Thomas, 2016; Westera, 2001).

Several Approaches of Competencies

Examining the literature regarding competency in education, it is evident that there is no consensus for this term because its meaning depends on the context. If the outcome of education is to acquire a specific behavior in particular conditions, when the student has achieved the competencies required and has met the expected average (Barnett, 1994; Westera, 2001), the student is referred to as competent. Although achieving the estimated competencies is the expected outcome of education, many countries look at competencies from several lenses.

Regardless of these different descriptions used in education, the most common model used for competencies is the cognitive-behaviorist model (Walker & Nocon, 2007). From this perspective, competence exists inside the individual as comprising the attainment of skills and knowledge and quantified in terms of performance and results (Evans, Newstead, & Byrne, 1993; Walker & Nocon, 2007). Research published by the North Central Regional Educational Laboratory (NCREL) recognized four levels of progress in the acquisition of competencies: beginner, elementary, skillful, and advanced, or expert (Salas-Pilco, 2013). Benner (1982) recognized five phases of proficiency: novice, beginner, competent, advanced, proficient (expert).

Different educational system within countries approach the concept of competencies differently. In countries such as Germany and Switzerland, competencies are the requirements needed for completing upper secondary school objectives and for demonstrating an extensive view of the purpose of education and educational objectives (Rychen & Salganik, 2003). In other countries, such as Malaysia, Australia, Hong Kong, and the United Kingdom (UK), competencies are transforming individuals into global citizens. Overall, countries specify essential abilities in several areas that students must possess, such as the ability to communicate, the ability for

mathematics, the ability to solve problems, the ability for self-management and competitiveness, as well as social and cooperative abilities, among others. These abilities are referred to as lifelong learning abilities, key abilities, general competencies, generic skills, abilities of being employed or employability skills, soft skills, 21st Century competencies and 21st Century learning(Chan et al., 2017; Voogt & Roblin, 2012).

In the educational sector, there is a lack of consensus regarding who is responsible for preparing students with the "key competencies" needed by industry. Some might think it is the sole responsibility of HEIs, and propose they need to be part of the curriculum of all courses students need to attend during their academic preparation (Chan et al., 2017). When students acquire competencies, it means they acquire the human capacities needed to work, and required for a continually varying labor market (Badcock et al., 2010; Chan et al., 2017; Westera 2001).

The introduction of competencies in higher education. Many educational initiatives that portray the concept of competencies took place in Europe, such as the "Bologna Declaration" by the Ministries of Education of 30 European nations (Hoareau, 2012; Van der Wende, 2000). The purpose of this declaration was to create the European extent of higher education and to encourage the European structure of higher education worldwide (Van der Wende, 2000). Leaders of the European Union (EU) member states set as their objective a continent with the most competitive and active economy (European Council, 2000; Reynolds, Eaton, Paganelli, & Shanley, 2008). According to the European Council (2000), the European economy needed to be based on knowledge and characterized by constant economic growth, which would lead to better employment and a better social structure (European Council, 2000). These leaders claimed that each European citizen needed a wide variety of critical competencies. European citizens would be prepared to operate in a changing and highly interrelated world, increasing the global effects of

the European system of higher education by 2010 (European Council, 2000; Reynolds et al., 2008).

In December 2006, specialists and government bodies from the EU developed another framework comprised of eight competencies (Voogt & Roblin, 2012). For them, key competencies were a requisite for individuals in order to achieve personal realization and growth, active social responsibility, public insertion, and employment (Crick, 2008; Salas-Pilco, 2013). The set of eight competencies developed by the European Council identified as necessary for lifelong learning, included: communication in the native tongue, communication in a non-native language, numerical competence, scientific and technological elementary competencies, digital competence, the ability to learn, societal and civil competencies, creativity, entrepreneurship, and artistic consciousness (Crick, 2008; Salas-Pilco, 2013). Similarly, they recognized several abilities individuals must develop in combination with the competencies, including: being critical thinkers, developing originality, having dynamism, knowing how to solve problems, having the capacity to evaluate danger, having the ability to make decisions, and having self-control of their emotional state (Crick, 2008; Salas-Pilco, 2013). The EU members proposed key competencies for HEIs students with a structure of degrees and performance founded on two primary cycles: undergraduate and graduate. It recognized a scheme of credits such as the European Credit Transfer System (ECTS) in order to encourage flexible programs to achieve undergraduate mobility, shared programs of study, preparation, and investigation.

Regarding the teaching of dentistry, EU members recommended that undergraduates complete a bachelor's degree in three years' study. After completion, they would enter a full-time five-year program in a school of dentistry. Around this time, many countries began to develop their own set of competencies, all of them forced by the 21st Century industry's needs (Halász & Michel, 2011; Salas-Pilco, 2013). Something interesting is that these abilities are the same

competencies adopted by the ADA (2016), and required of dentists in the 21st Century. Besides, in the US, it is known that graduates in the 21st Century need specific skills and knowledge, also known as 21st Century learning (Voogt & Roblin, 2012).

Overview of competencies frameworks in higher education required by the industry sector. Many organizations around the world recommended competencies frameworks of or the 21st Century. Salas Pilco (2013) found that newly developing economies have forced their educational sectors to prepare students with the necessary skills to face the challenging tasks the industry sector requires from graduates. He found that as the 21st Century was approaching, parents and teachers were increasingly concerned about the skills young adults would need to succeed in the upcoming century. Others proposed that individuals will have to be innovative, with global awareness and proficiency in information and communication technologies (ICT). Some authors stated that students must be able to interact in different socio-cultural settings, among other traits (Bereiter, 2002; Castells, 2010; Cope & Kalantzis, 2000; Salas-Pilco, 2013).

Along with developing competencies, came the establishment of specific indicators to assess competencies achievement. The Asia-Pacific Economic Cooperation (APEC), the Organization for Economic Cooperation and Development (OECD) and its country members, developed indicators of the competencies and skills young people should acquire to successfully face the future (Chan et al., 2010; Rychen & Salganik, 2003). The project called Definition and Selection of Competencies (DeSeCO Project) was published in 1997 and developed by several institutions in the US, such as the US Department of Education and the National Center for Education Statistics. Canada also participated. The main preoccupation of these counties was that instead of providing a knowledge-based education for students, their education should focus on the creation of generic skills that included the values and attitudes which would enable graduates to face the labor market demands created by globalization. OECD's purpose was that individuals

could acquire a set of competencies that enable them to turn into universal citizens, lifelong learners, and promoters of an individual's successful natural life that contributes to a better society (Chan et al., 2010; Rychen & Salganik, 2003). The key competencies had to be multifunctional, transferable to social fields, and offer advanced intellectual difficulty, integrated aptitude, coherent behavior, acute thinking, and originality, including the ability to communicate with others, as well as demonstrating understanding and rationality to solve problems (Rychen & Salganik, 2003).

Competency Recap

In summary, through the years, many countries developed competency frameworks for students. According to Turiman, Omar, Daud, and Osman (2012), and Salas Pilco (2013), the essential frameworks suggested by countries included: (1) DESECO/OECD, developed from 1997 to 2005, and known as 21st-century skills and competences for new millennium learners; (2) the Organization for Economic Co-operation and Development (OECD), Key Competences for Lifelong Learning, as developed in Europe in 2010 (DESECO); (3) the revised International Society for Technology (ISTE) developed from 1998 to 2007, and which suggested criteria for numerical mastery; (4) the "enGauge 21st Century skills" developed by the North Central Regional Educational Laboratory (NCREL & Metiri Group in 2003); (5) the Partnership for 21st-century skills (P21) in 2006 also created competencies for K12 education, called Assessment and Teaching of 21st Century Skills (ATCS), as established as part of an international plan supported by Cisco, Intel, and Microsoft; (6) another framework proposed by the National Assessment of Educational Progress (NAEP) in 2012; and lastly, (7) the 21st Century Competencies in Singapore in 2010 (Salas Pilco, 2013; Voogt & Roblin, 2012).

Competencies in the health professions and dentistry. The Consortium of Universities for Global Health (CUGH) noticed that global health programs experienced fast growth, but

lacked homogenous competencies and standardized curricula to lead this kind of program (Jogerst et al., 2015). This lack of homogenous competencies was also identified in 2009 by the Interprofessional Education Collaborative (IPEC). The IPEC comprises six health associations of academic institutions in health professions, such as medicine, nursing, dentistry, osteopathic, public health, and pharmacy. In 2009, an expert panel organized by the IPEC suggested that all health care students take classes together and have the same essential competencies. According to IPEC, this type of collaboration between students was necessary since it would enable them to engage in professional collaborative practice as required for health care professionals (Valachovic, 2012). A second report released in 2011 called "Team-Based Competencies: Building a Shared Foundation for Education and Clinical Practice," generated action strategies to renovate both education of health care professionals and health care attention provided in the US (Valachovic, 2012).

Around the same time, the Institute of Medicine (IOM) (2010) adopted the stance of health professional's education transformation. It advocated preparing students to acquire competencies, such as being critical thinkers and lifelong learners, which should be acquired by all health team members (Valachovic, 2012). The Global Health Competency Subcommittee was created by the CUGH in 2013 to create the leading global health competencies for health professionals (Jogerst et al., 2015). The subcommittee identified eight primary areas needing coverage for global healthcare in a globalized world: (a) the global condition of illness; (b) internationalization of health; (c) the well-being of individuals; (d) community and ecological causes of health; (e) partnership, affiliating, and communication; (f) moral code; (g) qualified practice; and (h) provide healthcare to different populations with impartiality (Jogerst et al., 2015). The competencies also involved three areas, such as abilities, program administration, and tactical analysis. Each competency was categorized as having knowledge, skills, and attitudes

(Jogerst et al., 2015). Overall, healthcare professionals needed preparation for a globalized world with specific competencies.

According to the American Medical Colleges Association (2011), the preparation for health care professionals should include basic sciences, such as physical and biological sciences, as well as behavioral and social sciences. Nevertheless, they eliminated the traditional approach to the health sciences curriculum that had several extra courses. Instead, as well as IPEC suggested in 2009, for them, all healthcare professionals education, including doctors and dentists, required the integration of the same competencies.

The first decade of the 21st Century evidenced a transformation of dental education in the US with the addition of diverse competencies. The most remarkable contribution that changed the practice of dentistry in the US was the creation of the ADA (Field, 1995; Pimentel & Reyes 2013). The ADA became the organization that followed the initiatives of the Institute of Medicine regarding implementing innovations within US dental education. It brought educational standards to the dental profession by creating a system of national instructional criteria, including the establishment of the guidelines for dentistry practice, such as several competencies for the teaching of dentistry. The addition of competencies is mandatory for each dental school in the US.

The Introduction of Competencies in Dentistry and Competency Based-Education

The integration of competencies within a school of dentistry's curricular structure is the primary concern of a dental school. Also, it is the primary concern of several dental organizations around the world, including the ADEE, the ADEA, the ADA, the Australian Dental Council, the Association of Canadian Faculties of Dentistry, the Dental Council of New Zealand, in the UK, and the General Dental Council (GDC), among many in the world (Hsu et al., 2015; Roudsari, 2018). In Canada, for example, the dental curriculum is ruled on a framework recommended by the Royal College of Physicians and Surgeons of Canada (RCPSCan), also known as the

CanMEDS (Roudsari, 2018). All of these dental associations not only recognize the importance of achieving competencies, but also developed required competencies as a requisite to dental graduation in their countries.

In dentistry, acquiring competencies also includes demonstrating clinical skills. Importantly, establishing competencies is not the sole concern of dental associations. According to Salas-Pilco (2013) and Alcota, De Gauna, and Gonzalez (2016), within HEIs, particularly those committed to the preparation of health professionals, a set of competencies, including professionalism, among others, are requirements for a curricular structure of a university program. Despite this affirmation, not all dental programs have the curricular structure to help students in the acquisition of the needed competencies. Kramer et al. (2009) wrote an article to address the environment surrounding dental education, which affected the need for a curricular change. This article explained the context in which ADA established the Commission on Change and Innovation in Dental Education (CCIDE). The commission's objective was to shape a consensus within the dental education community about innovative changes needed in the education of general dentists. They need to guarantee that dental school graduates come to the profession with the competencies required to solve the oral health needs of the patients in the 21st Century. Their recommendation was the integration of an adequate curricular structure along with teaching strategies of the required competencies. This adequate curricular structure is the Competency-based education approach (CBE). CBE is the preferred approach to teach health care professionals because it increases student's educational results (Eaton et al., 2008).

Competency Based-Education Approach

The competency approach was part of the training and professional development of professors, both in the US and the EU (Lozano et al., 2012; Westera, 2001). The competency approach is relevant for both professors and industry because it is related to the abilities and

qualifications individuals require in order to insert themselves forcefully into the labor market (Westera, 2001). Such abilities construction results from shared practices and accomplishments of the tasks related to their job and the market needs (Deakin, 2008; Lozano et al., 2012; Walker, 2003; Walker & Nocon, 2007).

CBE gained organizations' interest in the last 15 years because it supports students' learning requirements and enables them to better treat patients; it improves their readiness for general dental practice (Eaton et al., 2008; Henzi, Davis, Jasinevicius, & Hendricson, 2007; Lozano et al., 2012; Mbita, 2009; Rafeek, Marchan, Naidu, & Carrotte; 2004; Westera, 2001). For health professionals, CBE is the preferred pedagogical approach because its focus on student learning is the relationship between the health organization's priorities and the patient's health care needs (Gruppen, Mangrulkar, & Kolars, 2012).

The importance of a CBE approach was evidenced in a review paper conducted by Hendricson et al. (2006). These authors reviewed the educational best practices for helping dental students acquire the ability to function as general dentists. Their aim was that dentists converted into better applicants to begin advanced studies. The three topics were: (a) what is expertise, and when does an individual convert into an expert; (b) what are the differences between beginner and skillful; and (c) what instructive best practices can aid learners to gain rational abilities associated with the professional function, including critical thinking and self-directed learning? This review also aimed to provide a standard to faculty and academic planners in order to assess the degree to which their curricula contain learning experiences associated with the development of competencies. These competencies include problem-solving, critical thinking, self-directed learning, and other cognitive competencies necessary for dental school graduates to acquire the expertise as they progress professionally in the years following graduation. The conclusion was

that the accomplishment of competencies requires a CBE approach with specific learning experiences associated with its development.

Characteristics of a CBE Approach

CBE aims to lead the students to learn to become able and trained, learn to comprehend and think, and as well as to learn to acquire pertinent, coherent, and flexible knowledge (Pimentel & Reyes, 2003). CBE also requires professors to observe their students in different environments and guide their students during the acquisition of competencies. CBE focuses on the mastery of both content and skill and behavior acquisition, where other pedagogical approaches focus on only content mastery (Eaton et al., 2008; Yip & Smales, 2000). CBE has its origins and more direct application in technological education, but its analogous training of university professionals opened up a series of exciting possibilities and questions (Pimentel & Reyes, 2003; Yip & Smales, 2000). Some of the questions CBE has provoked are related to attaining competence instead of completing a specific time as other educational approaches often do.

According to Johnstone and Soares (2014), CBE attracts attention to two characteristics. First, the instructive practice requires a readjustment in order to validate the student has acquired manual dexterity and can demonstrate understanding and acquisition of several abilities in a real-life scenario. Second, even though its main objective is in regards to student learning, its fundamental characteristic is that it contributes to assuring excellence in higher education. The CBE approach places emphasis on the application and utility of knowledge versus the traditional approach of education, which centers learning on the acquisition of information disconnected from reality (Pimentel & Reyes, 2003). CBE proposes an integral vision of learning that points toward a combination of knowledge, skills, abilities, attitudes, and values around a task to be performed compared to a traditional educational approach that emphasizes the accumulation of

information. CBE also requires specific teaching strategies that support the acquisition of competencies.

Teaching Strategies for Competency Attainment

In the health professions, the word competency is related to cognitive abilities, the acquisition of knowledge, and the demonstration of specific clinical and behavioral skills (King, 2015; Lugassy et al., 2018; Steiner-Oliveira et al., 2008; Taylor, Grey, & Satterthwaite, 2013; Thomas, 2016; Yip & Smales, 2000). Being a competent professional within dentistry also requires the acquisition of specific skills that enables the future dentists to attend their patients independently without causing them harm. Professors must take their role as guides of this process seriously and select the appropriate teaching strategies that will serve for these purposes. They also need to understand that the achievement of competencies is a process comprised of several stages. These stages were described by Miller (1990).

For Miller (1990), a health care student's process of acquiring competencies moves through several levels. The first stage of this process is: knowing a subject. At this level, the student learns how to relate the material learned (Taylor, Grey, & Satterthwaite, 2013). Following this, the student goes through a second stage called: knowing how. At this level, the student is capable of relating and applying his/her learning (Taylor et al., 2013). The third stage is called 'showing' and it is when the student is capable of demonstrating his/her learning. In the fourth and final stage, called doing something, the student can perform a task and is associated with competency attainment (Taylor et al., 2013).

Relationship Between a Specific Teaching Strategy and Acquisition of Competencies

Some tasks required of dental students as part of the achievement of competencies are: acquiring knowledge of subjects, conducting research, implementing evidence-based dentistry, and acquiring manual dexterity, among others. For this reason, the teaching strategies to achieve

dental competencies should be varied and executed in diverse settings. Suitable settings for this are a classroom, as well as laboratory practices involving a significant quantity of time from students for pre-clinical practices (simulated), to clinical situations (real-life). All such settings are vital for students' acquisition of manual abilities and professionalism. Students also need to understand theoretical facts and take exams to demonstrate their knowledge and competency attainment (Elani et al., 2013).

Many proposed teaching strategies can help health students acquire the requisite competencies and clinical skills needed for practice in their respective fields. However, many practitioners also affirm that despite professors implementing diverse strategies, there are multiple factors affecting students' acquisition of competencies and clinical skills (Brand, Kuin, & Barrt, 2008). Therefore, dental professors must integrate teaching strategies addressing common factors that can affect student performance. One factors is the high amount of stress that students experience during their preparation, not forgetting the difficulties to acquire manual skills (Hendrickson et al., 2006). To avoid these factors, professors must include regular clinical training with enough hours of practice to allow students to achieve the manual dexterity needed to acquire these skills, and incorporate other strategies to help their students cope with the stress they might experience (Dahan & Bedos, 2010; Hendrickson et al., 2006).

One strategy that results in increasing the acquisition of clinical skills is when a professor plays the role of a mentor and a guide for his/her students (Dahan & Bedos, 2010; Hendrickson et al., 2006). The role of guides and mentors is specifically useful in the clinical environment. In clinical scenarios, the professor's role is not to supervise their students because supervising is appropriate for a professional practice setting (Gaberson & Oermann, 2010). Instead, the role of a professor in a clinical education setting is to facilitate the student's learning experience and

development of clinical abilities. Although health care instructors get involved in the learning processes of their students, their primary role is being facilitators (Gaberson & Oermann, 2010).

In a study conducted by Henzy et al. (2007), students highlighted the importance of having the opportunity to work closely during dental education with knowledgeable dentists in the specific settings used for dental education, such as pre-clinical (simulated situations) and clinical scenarios (real-life situations). The most remarkable practices, as described by the authors, and the most valuable part of dental instruction was when professors interacted closely and helped students to be competent. Such factors indicate that educating health care students also requires preparation, commitment, and planning from professors. The selection of the teaching strategy helps students in their educational process.

Overall, numerous teaching strategies in diverse settings are vital for competency attainment (Adomssent, Godemann, Michelsen, Barth, Rieckmann, & Stoltenberg, 2007). These settings can include classroom strategies such as, lectures, case discussions, doing presentations, answering questions, readings, written assignments, simulated cases with role cases, watching or creating videos of any simulated or real situation, as well as the integration of reflective journals as part of their teaching strategies among others (Eaton et al., 2008; Koole et al.; 2014; Reynolds et al., 2008; Williamson et al., 2011). Professors must also integrate technology to teach students, including the use of e-learning (Eaton et al., 2008; Koole et al.; 2014; Reynolds et al., 2008; Williamson et al., 2011).

Different settings of teaching and practice are also required as part of the student preparation to be competent. Dental students go to laboratory practices and have simulated and real-life practices. These practices attempt that the dental students acquire competencies and develop manual dexterity to perform their clinical practices independently. The next sections

provide an overview of the specific teaching strategies to help acquire each of the competencies proposed by the American Dental Association.

The Acquisition of Critical Thinking, Problem Solving, and Self-Directed Learning

Dentists need to develop critical thinking competencies that will enable them to solve problems. Besides, they need to build the capacity to learn on their own, which is called self-directed learning (SDL). As such, adult learners are considered independent persons capable of self-directed learning, surrounded by rich experiences that can be used as an educational resource (Knowles, 1970). Also, the motivation that involves adults as learners is a positive resource to promote learning itself in adulthood, which is an excellent point that professors can use to promote these competencies in their students. Hooks (2010) defines critical thinking as an interactive process between teachers and students. Professors promote and independent thinking when they empower their students.

In regards to developing problem-based-learning (PBL), it is useful a "collaborative, case-centered, and learner-directed method of instruction" (Koschmann, 1996, p. 96). Two essential teaching strategies that professors commonly use to foster the achievement of competencies regarding teamwork are collaborative and cooperative learning. Although these two terms are frequently misunderstood by many and used indistinctly by others, they are different. Collaborative learning is a teaching and learning strategy that fosters the creation of a learning community. In this strategy, students work together in teams and do relevant assignments shared by them (Oxford, 1997).

In collaborative learning, students from different schools can work together. In cooperative learning, the aim is the student's social development. In this strategy, they work in partnership divided into small groups, individually assessed, and assessed in conjunction, as group work (Oxford, 1997). According to Boud and Walker (1990), in collaborative work, both

students and professors need to interact regularly. With this interaction, students are moved to learn and understand to respect others' points of view and to solve problems. Teachers prepare them to face a globalized world with its diverse challenges. In dental education, this is an essential strategy that enables the future dentist to work in teams as it is a common practice in the field of dentistry. They can also achieve other competencies, such as health care promotion, as well as professionalism.

The development of SDL is a process where the students take control of their learning by preparing, implementing, and assessing their own educational needs and results without the help of others (Murad & Varkey, 2008). When teaching SDL, it is useful to emphasize the role of the student, which has to be engaged in diagnosing his/her learning needs as well as formulating them.

Teaching Evidence-Based Learning

One of the competencies dental students need is making their patients' treatment decisions accurately, which means that the future dentist needs to learn to collect information methodically. They need to take their clinical decisions based on scientific evidence resulting in an accurate, effective dental treatment plan (Ismail & Bader, 2004). To acquire this competency, the teaching strategy that a student need is a student-centered approach, and the inclusion of EBD.

The use of evidence-based teaching began in the 1990s to integrate scientific evidence into doctors' clinical judgment when evaluating their patients. This terminology evolved over the years and now includes both making clinical decisions and offering to patients the best treatment based on scientific evidence, as well as enabling health professionals to interpret, understand, and summarize all research findings, and prioritize their clinical practice (Beyea & Slattery, 2006; Ismail & Bader, 2004). EBD education enhances the dental student's confidence to treat their patients. They learn to base their treatment decisions on scientific evidence, so their patients'

treatment will have better outcomes (Beyea & Slattery, 2006). The practice of conducting research also teaches students to base their treatment decision on scientific evidence. Dental schools must consider implementing several procedures to ensure the integration of research into their dental education (Al Sweleh, 2016).).

Part of these procedures must include faculty and students training for the use of EBD. The interrelation of the students with research organizations, such as IADR, which is the International Association for Dental Research, and also the American Association of Dental Research (AADR) (Emrick & Gullard, 2013). Enabling the future dentist to integrate research as part of his/her clinical practices, and finally to become promoters of an EBD as part of his/her practices as future dentists.

The Teaching of Ethics and Social Competencies

Health care professionals also need to acquire ethical principles as part of their practices. They need to be able to integrate ethical concepts and moral values for their patient's benefit. One way to help students achieve these skills is by guiding the curricular structure with this intention. Adding ethical issues in the course content and the class assignments is an excellent way to achieve it. For example, according to Lewin, Olson, Goodman, and Kokotailo (2004), in an ideal medical school curriculum in ethics, the purposes, instruction, class content, and assessment techniques are explicitly exposed. They are guided by four educational principles, leading to the acquisition of ethical issues, including: (a) learning goals and objectives; (b) ongoing educational activities to highlight the application of principles to a real scenario; (c) problem–based learning strategies; and (d) immediate practical application (Lewin et al., 2004). However, the learning conditions planned must serve to inspire and motivate the students. They have to include that learners recognize their educational necessities, as well as the integration of social competencies (Kerka, 2002; Taleghani et al., 2004).

The achievement of social competencies requires a curriculum oriented towards service-learning. Service-learning is a teaching strategy that is used commonly in higher education, as well as in dentistry, and commonly known by dental professors (Yoder, 2006). According to Yoder (2006), they used it to build into student's competencies for necessary community work. Also, service-learning combines pedagogical goals and educational objectives with service to the community, with three goals: (a) enhancing learning, (b) encouraging public commitment, and (c) empower communities (Hood, 2009). However, dental professors are not entirely aware of the real meaning of service-learning (Yoder, 2006). So, although they implement service-learning as part of a dental curriculum, the intention of it is not always clear. Also, there is a lack of variety in dental employees, and it is occasionally seen as the dental profession's segregation, disregarding, and forgetting the real dental mission, which is taking care of the oral health needs of the general public (Hood, 2009).

For Hood (2009), this kind of curriculum will enable students to meet their patient's health care needs. It serves to nurture in them the acquisition of moral values, social responsibility, and ethics. The most suitable strategy that integrates service-learning is community service practices. These types of practices are especially important for rapidly developing student's social competencies. Moreover, the social engagement of dentists and the competency of professionalism it is taught to students through well-organized service-learning programs (Hood, 2009). Other competencies are related to social responsibility, such as having the ability to taking care of patient's safety. Being able to take care of patients is vital. A report showed that more people die due to a healthcare provider error than by diseases, such as cancer, AIDS, or a car accident (Loftus, Gerzina, Higgs, Smith, & Duffy, 2013). So, receiving appropriate instruction to achieve these skills is crucial.

Strategies Used to Develop Psychomotor Abilities

Professors help their dental students develop the requisite psychomotor abilities by integrating specific teaching strategies performed outside of the classroom, simulated and real-life practices. The strategy that implements the use of simulation is called the pre-clinical practice and is the perfect scenario to develop these abilities (Rafai et al., 2016; Qualtrough, Whitworth, & Dummer, 1999). After taking theoretical concepts, students begin with simulated practices, which are mandatory.

These practices require well-trained professors, as well as adequate laboratories, equipped with mannequins or typodontos on which to perform them. It is crucial that simulation is aligned with the program curriculum structure and linked the student's learning requirements and that students dedicate enough time of practice to develop the manual abilities required (Field, Walmsley, Paganelli, Mcloughlin, Szep, Kavadella, & Cowpe, 2017). Lastly, when students achieve the simulation practice, they are guided to practice in real-life scenarios. This type of practice is clinical practice. All clinical skills needed by dentists are accomplished both in pre-clinical and clinical situations. Also, other competencies, such as health care promotion and professionalism, are accomplished during these two types of practices.

Clinical practices become the final phase of dental education. This practice enables students for the acquisition of clinical skills. In these practices, the dental program exposes students to clinical scenarios in a dental clinic. Also, clinical practice grants students to achieve professionalism because students are allowed to practice in a real scenario with real patients. This learning experience occurs during the last year of dental instruction. According to the Association for Simulated Practice in Healthcare (ASPIH) (2017) faculty is responsible for patient safety, takes action regarding student's performance, and should be competent in this type of teaching strategy. In these practices, students guided by a professor perform the work by themselves, thus

acquiring the needed competencies. However, faculty attitude is crucial for the development of clinical competencies. They are responsible for creating a pleasant atmosphere (ASPIH, 2017). They are also responsible for guiding students on taking more complex clinical scenarios, as they need to perform a more complex work, which results in a more productive experience that is not substituted by a simulation strategy or a classroom environment.

Common Teaching Strategies to Help the Achievement of Several Competencies

The results of a study conducted by Rubin (2004) indicated that experiential learning, such as the clinical setting, as well as the community-based experiences, showed to be adequate to nurture social responsibility, cultural competences, and empathy. Another strategy useful for building social responsibility is teamwork. This kind of work contributes to increasing the learning experiences and the acquisition of student's clinical skills (Behar-Horenstein & Feng, 2017; Jacobson, 1999; Jones, 2011). It also increases leadership abilities by teaching to create a respectful atmosphere and cooperation. Healthcare organizations that provide safe teamwork experiences can help to advance the quality of patient attention and decrease job issues that cause exhaustion among healthcare professionals (Lerner, Magrane, & Friedman, 2009).

The literature says that learning increases with more exposure to patients in clinical settings or a community-based experience (Jacobson, 1999), when students are involved in shadowing practices assisting their professors or helping other students while they are attending their patients (Heitkamp, Rüttermann, & Gerhardt-Szép, 2018). Observing and accompanying professors and other students of higher levels during their clinical practices with a patient becomes an excellent way to help students acquire clinical skills (Heitkamp et al., 2018).

Dentistry Within the Dominican Republic

Currently, the total population of the DR is about 10.8 million people, with 80.3% representing the urban inhabitants of this country (Santander Trade Portal, n.d.). The DR is

territorially divided into 32 provinces, with a total area of 8,442 square meters. Ethnic origins are diverse, with the majority of individuals identified as a mixed origin; 73% of the population has European descent, and about 16% have African origins. The official language is Spanish. However, other languages are also spoken, such as Haitian Creole, French, and Samaná Creole (Santander Trade Portal, n. d.). English is commonly used in business and commerce.

The literacy rate is about 87% (Santander Trade Portal, n. d.). The DR has one of the most active markets among the central income nations of the world, and HEIs' distribution is more or less equally in many parts of the country (OECD, 2012). The country has 51 HEIs recognized by the Ministry of Higher Education (MESCyT) (Santander Trade Portal, n.d.). Of these universities, nine are public, which includes, the Autonomous University of Santo Domingo (*Universidad Autonoma de Santo Domingo*, UASD), and the rest are specialized institutes. The area of education is the profession with the highest proportion of students enrolled within a Dominican HEI. This situation is attributed to the investments in human resources that the Dominican government has made to enhance the educational level of the Dominican population. Accordingly, the Dominican government has provided 20,000 scholarships to study education, seeking to recruit high school graduates with a better profile for the teaching career (Santander Trade Portal, n.d.).

Since 1990, the DR has experienced a growth in the demand for higher education. By 1993, the university enrollment was 108,335 students; by 2002, the rate of new enrollments within HEIs had reached the amount of 286,134 students (Thomas, 2016). Private HEIs cover 57% of the total enrollment of students (Thomas, 2016). In 2017, the UASD had 39% of the total of the students enrolled within HEIs in the DR. The rest of the students were distributed among other smaller HEIs financed by the Dominican government (Santander Trade Portal, n.d.). The age range of students in Dominican universities is between 18 to 30 years (Santander Trade

Portal, n.d.). However, in recent years, the andragogical model of higher education has also increased, with several HEIs dedicated to the adult population.

In regards to the teaching of dentistry, currently, there are 11 HEIs that graduate approximately 200 professionals in dentistry per year (Thomas, 2016). Nevertheless, dental education was not taught formally in the DR at its beginnings. Several laws enacted through the evolution of the health sciences within the DR has helped in shaping the Dominican dental profession until what it is nowadays. However, few authors have written about it. Although Taveras (2007) and Thomas (2016) have contributed to the core knowledge of the background of dentistry for this study, there are cites of other authors within this section. The context on which the dental profession got established within the DR is the basis for understanding the growth and development of Dominican dentistry, and how these facts contributed to DR dentistry enhancement and its current situation.

Regulations for the Practice of Dentistry Within the Dominican Republic

The first regulation of the republican life in the DR was "*El Juro del Hospital*" in 1846 (Stern, 2017; Taveras, 2007, p. 18). The law established the roles that different doctors would assume in case of epidemics or rare diseases. In that same regulation, they established the responsibility of the Medical Jury of that hospital (*El Juro del Hospital).* The main objective was to rule the dispatches of food and drugs, and the license to practice given for candidates within various health professions. For that time, in 1862, the regulation of medicine and surgery was put into effect, but it was not possible to apply it due to its low degree of development (Taveras, 2007). Then, in 1882, the first regulation was released and implemented in the country. This new law required all existent health care professionals (medical doctors, dentists, and pharmacists) take a final exam in order to certify their proficiency to practice their professions. This regulation also applied to the bleeders and midwives that learned the practice of these informal professions

on the island. Finally, in 1883, a new law that modified the prior law of 1882 was enacted. This law favored the non-academic dental career within the DR, with no necessary academic preparation needed for the practice of dentistry. At that time, instead of considering dentistry a science, some people believed it was a manual art; consequently, dentists learned the profession in non-formal settings by watching others. Once they finished their time of preparation, candidates to become dentists received an attitudinal examination consisting of theoretical aspects of dentistry and clinical procedures in order to demonstrate skillfulness as dentists (Taveras, 2007).

The examination was not given alone to the candidate (Taveras, 2007). The presence of the instructor was mandatory, playing an essential role as an active participant in the examination process. The instructor was even allowed to give opinions and make clarifications when required, and if the candidate failed the exam, they implemented a remedial solution. The candidate had to explain to the jury the intention of continually enhancing and improving his/her learning for six more months. After finishing this time, the candidate who failed the first exam had to take a new exam (Taveras, 2007).

One of the characteristics of the 19th century was the lack of regulation for the practice of dentistry. But by the year 1902, the school of dentistry became part of the College of Medicine at the UASD, and the national congress modified the general law of education. One significant modification of this law was the integration of admission criteria for university applications. The requirement consisted of a high school degree certification, being 18 years of age, as well as being a school teacher (Taveras, 2007). Until 1914, the school of Dental Surgery was part of the College of Medicine and established at the Professional Institute, which later became the University of Santo Domingo. Then, it became the current UASD. At the time of the founding of the school of dentistry, the school of dental surgery had graduated 81 professionals (Santana, 2015).

Throughout time, Dominican dentists took advantage of the proximity of both the United States, specifically New York, and Cuba. Some DR dentists studied dentistry in the US at the Dental College of New York, and these new dentists brought back new knowledge to their country (Taveras, 2007). Others studied in Cuba, and also brought back to their country their knowledge, contributing to the enhancement and growth of dentistry within the DR. Since then, until today, there has been exponential growth, expansion, and many advances in the professional practice of dentistry. This included integration of new dental materials to Dominican dental practice and new technology, and new dental specialties taught since many dentists were specializing in other countries and coming back to the DR influencing the development of dentistry within it (Taveras, 2007).

An event that marked a revolution in the development of Dominican dentistry was the foundation of the Dominican Dental Association in 1926 (Taveras, 2007). Also, an international organization brought to the DR in 1931 was the Latin American Dental Federation (FOLA). FOLA was founded in Chile in 1917, during the celebration of the 1st Pan American Convention of Dentistry. Then, in 1949, was established the fourth Dominican Dental Association (*Asociación Odontológica Dominicana*, AOD). In 1950, it was held the first dental convention within the DR (Taveras, 2007).

On December 26, 2018, AOD, was converted into a Dominican College of Dentists (COD). The creation of the COD was enacted under law no. 63-18, which had been introduced through the Chamber of Deputies by deputies Mariam Cabral and Faride Raful. The primary purpose of the COD is to establish criteria for the proper exercise of the profession through the establishment of canons of conduct, procedures, and standards that guarantee a more ethical, scientific, and social professional practice in the DR (Rodríguez, 2019).

Current Situation of Dentistry Within the Dominican Republic

Many Dominican universities teach dentistry within the DR, and although the MESCyT approves them to teach dentistry, each university has defined their specific dental graduate profile, its curricular structure, and their teaching strategies (Taveras, 2007; Thomas, 2016). Currently, 12 universities teach dentistry within the DR including: *Universidad Iberoamericana* (UNIBE), *Universidad Nacional Pedro Henríquez Ureña* (UNPHU), *Pontificia Universidad Católica Madre y Maestra* (PUCMM) with two campuses, one in Santiago, and another in Santo Domingo; *Universidad Odontológica Dominicana* (UOD), *Universidad Federico Henríquez y Carvajal* (UFHEC), *Universidad Eugenio María de Hostos* (UNIREMHOS), *Universidad Autónoma de Santo Domingo* (UASD), *Universidad Central del Este* (UCE), *Universidad Católica del Cibao* (UCATECI), *Universidad Católica Nordestana* (UCNE), *Universidad Tecnológica de Santiago* (UTESA) (See Figure 2). Recently, the *Instituto Tecnológico de Santo Domingo* (INTEC) incorporated dentistry as part of their educational programs. However, there are no students graduated yet from dentistry in this university, neither from UTESA. Eight of these universities located in the capital of the country, Santo Domingo, and one of them is public, while the others are private.

Figure 2. Universities teaching dentistry in the Dominican Republic (Reyes, 2021).

Regarding higher education in the DR. Only three educational programs, as established by MESCyT, defined needed competencies for their students. These programs are Civil Engineering, Medical program, and the Nurse program. Therefore, in dental education, each dental school determines and declares an expected profile of outcomes met by its graduates. Each school has its curricular structure. MESCyT has not specified competencies for dental programs and their graduates. After completing MESCyT's requirements, each dental plan decides the curricular design and its graduates' profile independently. Currently, many Dominican dental programs are in the process of changing their curriculum to CBE.

Regarding dental education in the DR. Each dental program is approved by the MESCyT and reevaluated by them every five years. Since 2018, every dental clinic within the DR's dentistry schools had to achieve a qualification obtained by inspecting its facilities and completing several processes and documents. Obtaining such certification indicates that this dental clinic meets the standards to ensure patient safety. This assessment's objective was to

ensure the dental clinics associated with dental education teaching meet the measures suggested to health care centers in the DR.

With a new government and a Pandemic stage caused by COVID-19, many things have changed, and dental school clinics and preclinical laboratories were closed since March 2020. To open and continue teaching in a preclinical and clinical environment, they had to accomplish new requirements that MESCyT and MSP had asked them for safe practice for patients, students, faculty, and other dental education member's team. These permits were granted in September 2020 and included new standards for safe dental practice with COVID-19. Dental school clinics had to accomplished new requirements.

Regarding dental practice in the DR. It is ruled by the MSP. After graduation, Dominican dentists need to bring their license called Exequatur, which allows them to practice. Obtaining such a request is not based on any written or clinical exam, just evidence of graduating with a dental degree.

Regarding dental associations related to Dentistry, in the DR. In December 2018, the Dominican Association of dentists was converted into the College of Dentistry (CDO by its acronym in Spanish). The Dominican Congress enacted its creation with law 63-18. The CDO's mission is to aid the MSP in regulating dentistry's national practice and promote DR continuing education and the best practices of DR dental profession.

Regarding specialized dental associations. There are several dental specialized organizations within the DR (Taveras, 2007). The specialized dental associations are: The Society of Endodontics (SDE), the Dominican Society of Oral Maxillo Facial Surgery (SODOCIBUMAX), the Dominican Society of Periodontics (SODOPERIO), Group of Dental Studies (Grupo de Estudios Odontológicos, GEO), Dominican Society of Implantology (Sociedad Dominicana de Implantología, SDI). Dominican Society of Pediatrics Dentistry (Sociedad

Dominicana para la Odontologia del Nino, SODONI) and the Dominican Society of Orthodontics (Sociedad Dominicana de Ortodoncia, SDO) (Taveras, 2007).

Current situation. At this Time, there is a Public project of creating the National Catalog of Health Professions. In December 2020, the Vice Ministry of Government Monitoring and Coordination developed workgroups with experts related to each labor market to advance in constructing the National Qualifications Catalog. This catalog is a fundamental instrument of the National Qualification Framework, which allows standardizing the competencies that people require for its development in the labor market and its progression in the country's different education and training systems (The Dominican Presidency, Office of the Press Secretary, 2021).

Chapter 2 Closure

Through an extensive review, it is evident that competencies and clinical skills are an essential part of a dental education program. According to Chuenjitwongsa, Oliver, and Bullock (2018), dental education needs to develop dental students' competencies and clinical skills. That way, when graduating, they can practice without supervision and with a commitment to continue their education during their whole life as lifelong learners. The acquisition of both competencies and clinical skills requires a curricular orientation towards these goals. Specific teaching strategies are mandatory for competency attainment. Dental programs should seek input from industry professionals, faculty, and dental graduates when determining program content. The teaching experiences students receive should be diverse and include several settings, such as classroom, practices in laboratories, as well as pre-clinical and finally enough clinical experiences.

In summary, higher education students need to acquire special abilities or key competencies during education (Chan et al., 2017). It is especially true for health professionals. Being a competent individual means to be able to perform a complex task in a specific scenario.

Dental competency is related to managing activities, can be perceived in terms of effectiveness, and need to be taught in a real setting, with a CBE curriculum, and a trained teacher. Finally, there are four levels of progress in the acquisition of competencies: beginner, elementary, skillful, and advanced, or expert. The dental schools are responsible for providing an organized curricular structure, including specific teaching strategies. They are responsible for ensuring their dental students graduate with the competencies of dentistry. So, when they reach the end of the program, they are competent individuals, capable of effectively treating a patient.

In the next chapter, I develop the research methodology of my study, including the research design, population, instrumentation, data collection methods, and its limitations. It offers a justification as to which specific techniques were carefully chosen. In doing this, I delineate the validity of these methods clarifying how they add toward the findings and eventual conclusions of this study.

CHAPTER III

RESEARCH METHODOLOGY

In this chapter, I explain the research design, population, instrumentation, data collection methods, and limitations of my study. This quantitative study aimed to gather perceptions regarding how well the current curriculum used in DR dental schools helps students acquire the ADA required competencies and clinical skills. This research was a national study that gathered perceptions from critical stakeholders, including students, practicing dentists, faculty, and industry professionals.

Research Questions

The research questions that guided the design of this study were:

1. What are the perceptions of DR dental students, practicing dentists, faculty, and industry professionals regarding the following:

(a) student's current acquisition of competencies and clinical skills to treat patients; and

(b) current incorporation of preclinical and clinical components, including evidence-based dentistry, community service, diverse pedagogical strategies, and incorporation of research into the dental program?

2. What are the similarities and differences between the four stakeholder groups' perceptions regarding students' current acquisition of competencies and clinical skills to treat patients, and other pre-clinical and clinical dental program components?

3. To what extent do various program preclinical and clinical dental program components predict the perceived acquired competencies and clinical skills?

This chapter describes the methodology selected to facilitate the research. It describes the methods of data collection reviewed and used in this study before presenting a justification as to which particular techniques were selected. In doing this, I outlined the validity of these methods clarifying how they added to the eventual conclusions of the study. This chapter ends by relating any problems anticipated to be experienced in the research and suggesting action for future resolution.

Research Design, Approach and Rationale

For this study, a quantitative non-experimental design was used in which surveys gathered perceptions from dental students, practicing dentists, faculty, and industry professionals. Because the interest was the perceptions of a broader population of dental students, practicing dentists, faculty, and industry professionals in the DR, a survey method was most effective. A survey data collection process asks questions of a selected sample from a larger population to have an overall view and to generalize to the broader population (Creswell 2014; Fowler, 2009).

Population and Access

The population used for this study included all dental students, practicing dentists, and faculty within nine DR schools of dentistry. It also included industry professionals who are the owners of the main oral health care centers both private and public sector that hire or supervise Dominican dentists. A more detailed description of potential participants follows.

Students

The students asked to participate were enrolled in a Dominican dental program during the 2019/2020 academic year, and had completed at least the final clinical cycle of their dental program. It is at this point that students can understand and perceive whether or not they acquired the necessary competencies. The population of such students was about 543 (See Table 1 later in this section for a detailed view of the population per university). The sample was those who

responded, which for a 95% level of confidence, included at least 226 students (See Figure 3 with Cochran's formula).

Practicing Dentists

The sample of practicing dentists was limited to those who graduated from a Dominican dental school within the last five years. The universities that offer dentistry within the DR have had curricular reforms in the past five years that respond to the advances in bio-materials and technology; thus, the perspective of these newer dentists may be different from other Dominican dentists who had graduated before this period. Also, inviting dental graduates with more than five years of experience might result in biased opinions. Bias also might occur in these respondents due to the influence of continuing education courses taken, specialization or the expertise acquired due to the practice itself, or because they do not remember some components of their dental education. The total population of potential practicing dentist's participants was about 3,120 (See Table 1 later in this section for a detailed view of the population per university). The sample was those who responded, which for a 95% level of confidence, included at least 343 practicing dentists (See Figure 3 with Cochran's formula).

Faculty

All Dominican dental school faculty currently teaching were invited to participate. The total population of such potential faculty participants was about 557 (See Table 1 later in this section for a detailed view of the population per university). The sample was those who responded, which for a 95% level of confidence, included at least 228 faculty (See Figure 3 with Cochran's formula).

Industry Professionals

The final group, industry professionals, consisted of a sample of professionals, dentists, or not, from throughout the DR who currently hire or supervise Dominican dentists. These

professionals were selected from essential private oral health care centers within the DR, and supervisors from the public sector. They represented all segments of the dental industry, including private centers, public centers, hospitals, and insurance oral health centers. The owners, or supervisors of these centers, as representatives of the dental industry sector, were invited to complete the survey. The total potential population of industry professional's participants was about 100 industry professionals selected with a convenience non-probability sampling sampe method. The sample was those who responded, which for a 95% level of confidence, included at least 80 industry professionals (See Figure 3 with Cochran's formula).

Access

Because it is not usually possible to survey an entire population of individuals or related organizations, suitable sampling and survey methods were crucial to permitting generalization back to the population (Gall, Gall, & Borg, 2007). However, due to the researcher's role in a leading position within a Dominican school of dentistry, I had access to the directors of all 11 dental schools. Thus, I was able to acquire the number of dental students, dental faculty, and dental graduates from the last five years from nine of these schools. Although it was a national study, not all dental schools participated in the study. Two schools of dentistry did not fit the inclusion criteria of this study because they did not have dental graduates with at least five years of graduation, so they did not participate. Another university did not approve of participating in it. Due to confidentiality, in the table that indicates the number of students per participating school, I did not present the name of each university; instead, I used a number to identify each university (See Table 1 for a detailed view of the population per university). After HSIRB approval (See Appendix B), I asked these Directors to distribute the survey to all their dental students and dental faculty via an e-mail with a google form survey link. Also, I asked their permission and went to their universities and shared hard copies of the survey directly with some of their professors and

students who voluntarily wanted to participate in the study (See Appendix B). In this case, I used a convenience sampling method, which is a non-probability process taken from a group that is easy to contact (Brink & Wood, 1998). For the hard-copy surveys, I placed a cover letter as the front-page, which included the informed consent of the study that explained the purpose of the study, assuring anonymity, and asked them if they wanted to participate (See Appendix B).

Regarding accessing both practicing dentists and industry professionals, the researcher occupies a leading position in a Dominican school of dentistry. Thus, I had access to send an e-mail directly to the Dominican College of Dentists to allow me to contact practicing dentists via the databases maintained by the Dominican COD, by its acronym in Spanish (See Appendix E). Consequently, the researcher had access to the population intended for this study. Also, I asked permission from school directors to go to their universities and contact the practicing dentists who were taking continuing education courses, and asked them to participate in the study (See Appendix D). In this case, I again used a convenience sample method. The sample consisted of those who met the inclusion criteria and voluntarily responded to the survey. As needed, I also asked their permission to go to the weekly meetings of the Dominican College of Dentists. Also, I asked permission and sent someone and shared hard copies of the survey directly with some of the practicing dentists assisting in these courses that met the inclusion criteria and who voluntarily wanted to participate in the study (See Appendix D, E).

Since the objective was to ensure adequate statistical power for the study, I used a suitable method for determining the appropriate sample size. The sample size is the number of complete responses that the survey receives, and it is called a sample because it only represents part of the group of people (or target population) whose opinions or behavior are of my interest. Respondents to the survey were those willing to participate in the study. A confidence interval was a preferred method to determine the sample size of the population and provided a probable range of values

which is likely to contain an unknown population parameter, the estimated range calculated from a given set of sample information (Gall et al., 2007).

The confidence interval used was 95%, which covers 95% of the standard curve and the possibility of observing a value outside of this area; the margin error was 5%. The Cochran formula was used to estimate the ideal sample size given a desired confidence level (95%), and the projected proportion of the characters present in the population. Cochran's formula is appropriate in situations where there are large populations (See Figure 3 with the formula that is used to calculate the target population).

Table 1

Population Participating in the Study

University Number	Students in Final Cycle	Dental Graduates 2014-2019	Faculty
1	55	238	98
2	101	76	
3	45	165	35
4	35	71	23
5	43	478	76
6	95	214	39
7	30	177	42
8	52	504	29
9	35	296	60
10	15	541	70
11	17	361	41
Total	543	3,120	557

Note: Participants in this study

$$= \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

Figure 3. Cochran's formula to estimate target population of the study.

The meaning of each value of this formula is as follows: e represents the preferred level of precision (margin of error); p is the estimated percentage of the population with the quality in question (Gall, Gall, & Borg, 2007). Z-value is identified from the table of the standard curve as a point alongside abscissa of the standard normal distribution. It falls within limits ±1.96σ, where 99 percent of that falls within limits ±2.58 of the standard curve is identified by the z 99% of the cases beneath the norm 95% and 99% correspondingly (Barlett, Kotrlik, & Higgins, 2001).

Data Collection Procedures and Steps

The surveys for this study were cross-sectional with information collected at one point in time. An online survey instrument was sent via a google forms link e-mailed to participants or via hard copies through a convenience sample method. The first step in the data collection was obtaining approval from the Western Michigan University Institutional Review Board (WMU IRB), as well as the Iberoamericana University (UNIBE by the acronym in Spanish) IRB committee, because this university is the only Dominican university with an IRB (See Appendix C). All 11 Dominicans schools of dentistry deans or directors were contacted using a WhatsApp group chat between all Dominican dental school directors and the president of the COD. Via this chat, they received communication about the study and I requested their assistance in conducting the survey.. With each university approval, as well as with UNIBE's IRB's approval, it was assured that every Dominican university was represented equally, assuring no bias due to the researcher's role as occupying a leading position in a Dominican school of dentistry. See

Appendix B, C, C-1, D, D-1, E, and E-1 for such IRB approval letters, approval emails, and the letters sent to the school directors).

As the second step, each dental school director received a letter by e-mail explaining the purpose of the study and asking permission to conduct the research (See Appendix D, and D-1) Additionally, after the WMU IRB's approval was obtained, it was sent to each school director, and they received a letter and informed consent by an e-mail which explained the purpose of the research, assured confidentiality, provided researcher information, and explained the survey, and asked them to distribute the survey to their students, and faculty (Appendix F, F-1). Upon agreeing, they were told to forward an e-mail with the URL link to the google form surveys to all their dental students and faculty.

When the initial response was low, the researcher asked the directors to send a follow-up email to help secure additional participants (Appendix G, G-1). Many dental schools within the DR have a database of existing and graduate students, and as well as faculty e-mails. In case they did not have all such e-mails, hard copies of the instrument were provided for distribution to their current students and faculty through a convenience sampling method. In order to distribute the hard copies, the researcher sent someone on behalf to these universities. In one case, the researcher asked permission and went herself to distributee hard copies in order to obtain more participants for the study.

Practicing dentists and industry professionals were contacted by myself using the e-mail obtained from the professional association database, or going to the organizations directly where they work or to the institutions where they were taking continuing education courses; in case of industry professionals, the surveys were taken to the center they own or supervise. Also, the surveys were sent by Whats App as needed. Also, I asked permission to send someone and shared hard copies of the survey directly with some of the practicing dentists assisting in these

continuing education courses that meet the inclusion criteria and that voluntarily want to participate in my study (See Appendix D, D-1).

Instrumentation

The "2008 ADEA Competencies for the New General Dentist" was the primary guide for developing my surveys regarding the acquisition of competencies as suggested by them for dental students and graduates. I also reviewed items from other countries' dental competencies and clinical skills, such as the competencies document provided by the Australian Dental Council in 2010, the Association of Canadian Faculties of Dentistry's 2007 document of competencies, and the Dental Council of New Zealand's competencies document written in 2012 (Hsu et al., 2015). Likewise, I reviewed survey examples from previous research assessing student's perceptions regarding their acquisition of critical dental competencies and clinical skills in their dental education (ADEA, 2016; Albino et al., 2008; Alcota et al., 2016; Haden et al., 2010; Hsu et al., 2015).

The final survey instruments (Appendixes H, H-1, I, I-1,J, J-1, K, K-1, L, L-1,L2, and L3) consisted of specific competency and clinical skills statements as divided into four sections (demographics, competencies, clinical skills, and program components). There was a slightly different version for each group of participants, generally asking the same questions from each group's point of view: students, practicing dentists, faculty, and industry professionals. The last section of the survey regarding program components (preclinical hours, clinical practices, teaching strategies, community service, research, and evidence based-dentistry) was not asked of industry professionals, since they lack knowledge of these variables.

The measurement for each section was a six-point Likert scale. In regards to competency and clinical skills, participants rated their level of confidence (1=not at all confident, 2= only slightly confident, 3=somewhat confident, 4=moderately confident, 5=strongly confident and

6=100% confident). In regards to the last section, program components, participants indicated their level of agreement, because this was more appropriate for the type of questions I was asking (1= strongly disagree, 2= moderately disagree, 3=slightly disagree, 4= slightly Agree, 5= moderately agree, and 6=strongly agree).

Electronic and hard copy versions of the surveys were validated, both the English and Spanish version for each. Upon the conclusion of the survey design, Creswell (2014) recommends pilot testing or field testing the survey. The current student surveys were pilot tested with three students. One of these students was recently graduating, and the other two were closer to graduating, as well as it was pilot tested with three practicing dentists. The faculty and industry professional surveys were pilot tested by three persons from each type. Pilot participants reviewed the surveys for content clarity and overall ease of taking the survey, and necessary edits with their suggestions were done after their suggestions. Finally, the electronic copy of each survey was pilot tested by one person of that type for each survey for overall ease of taking the survey. A complete description for each of the surveys per participant follows.

Current Student and Practicing Dentist Surveys

The current student and practicing dentist surveys are almost identical. They consisted of well-detailed competency and clinical skills statements, and a six-point Likert scale that asked participants to rate their level of confidence in the acquisition of these necessary competencies and clinical skills. The following explains each type of question asked as broken down by survey sections.

Demographics. The first section of these surveys focuses on participant demographics, including questions related to the participants' general information, such as age, gender, and the university in which they currently enrolled in the case of a student. Practicing dentists had to select from a group of universities. This section included the first seven questions of the survey.

The practicing dentist survey specified at the beginning that only recent dental graduates from 0-5 years are to participate. This requisite was part of the inclusion criteria. If the dental graduate had more than five years of graduating, the survey automatically skipped out this participant from responding to the rest of the on-line survey. The practicing dentist survey also requested years since graduation. It asked the type of practice, such as private or public, and also asked if they took any continuing education courses since graduation.

Dental competency. The dental competency section asked participants several survey questions for each competency area, rating their level of confidence through a six-point Likert scale for each competency. The aim was to understand if they believed they had acquired the competency asked. For example, they had to select their level of confidence for critical thinking, problem solving, self-directed learning, health care promotion, communicating with others, interpersonal skills, professionalism, practice management, use of informatics, evidence-based dentistry, and establishing and maintaining patients' oral health. This section goes from question number nine to question number 16.

Dental clinical skills. The third section of these surveys explored participants' perceptions regarding their confidence in the acquisition and preparation of several dental clinical skills required to practice as general dentists. These skills are: (a) prosthodontics,(b) periodontics, (c) endodontics,(d) oral surgery,(e) operative dentistry,(f) pediatric dentistry, (g) public health, (h) cariology, and (i) orthodontics. Additionally, they had to respond regarding several areas regarding their dental education, such as (a) community service, (b) research, and (e) evidence-based dentistry. This section goes from question number 17 to question number 20.

Other components. The fourth section covered program components within the dental program they attended, including pre-clinical, clinical research, community service, and teaching strategies. In regards to pre-clinical courses, participants have to indicate their level of agreement

regarding the implementation of pre-clinical courses, the hours implemented, and whether these pre-clinical sessions prepared them to be useful as future dentists. The pre-clinical areas explored were: (a) dental anatomy, (b) operative dentistry, (c) dental anesthesia, (d) endodontics prosthodontics, (e) periodontics, (f) oral surgery, and (g) biomaterials. This section goes from question number 21 to question number 27.

About clinical components, professors teach many clinical areas as part of the class content of some pre-clinical courses, not by a separate class content. Dental students take theoretical courses and pre-clinical practices. Then, they are supposed to be prepared to attend patients in the clinical areas explored in the study. Thus, in these clinical areas, students must demonstrate what they have learned through their pre-clinical courses and theoretical classes. The clinical areas explored are: (a) diagnostics,(b) operative dentistry, (c) pediatric dentistry, (d) endodontics, (e) prosthodontics, (f) periodontics, (g) oral surgery, and (h) cariology.

In regards to whether research is part of the dental curriculum, participants had to indicate their level of agreement regarding several statements. Dental curriculum teaching strategies to teach students to conduct dental research and to make systematic reviews of literature. With these questions, I obtained information for both the knowledge of research as well as evidence based-dentistry. Also, they had to answer if they agree they can implement the best patient treatments considering the benefits and harms of it and alternative care options. Additionally, in this section, respondents were asked to indicate if their professors taught them to solve problems, implement the best patient treatments considering the benefits and harms of alternative care options if they can think critically and seek solutions to cases.

In regards to community service, participants had to indicate their level of agreement concerning if the community service in their dental curriculum prepared them to engage in the community, and as well as to strive to make it a better place. Also, they had to answer if they can

appreciate the influence of social, cultural, and economic forces on oral health care. Additionally, they had to answer if community service taught them to implement programs regarding health promotion, as well as to understand and cooperate with local and global public health. The last part of this question wanted to understand curricular and extracurricular experiences related to community service during their life as students. This question responded both to the incorporation and knowledge of community service, as well as to public health.

In regards to the teaching strategies, there were two questions included. There was one question that asked if the teaching strategies used by their professors were motivating and enriching for current students, or were motivating and enriching for practicing dentists. Also, there was a list of several teaching strategies used by teachers correctly, and of others used by students as asked by their teachers as part of the assessment process, or class content. The strategies used by teachers were diverse, such as if they develop cases and diverse situations related to patients' needs.

I also wanted to understand if professors used typical class patterns, such as lectures, as well as the use of technologies such as whatsapp chat, facebook, google docs, and teaching online classes. The strategies students need to do were recording videos, reflective journals, brainstorming, watching video tutorials of any material taught. Other strategies explored were cooperative learning, pre-clinical sessions, going to the clinic to help other students working in clinical practices, going to conventions, and taking extracurricular courses inside or outside the campus. Lastly, in the case of students, they were asked if they were taught to participate in research activities, such as presenting clinical posters.

In the case of practicing dentists, if they were taught to do so. Likewise, they had to indicate if they can practice dentistry effectively when they graduate. This question corresponded to the number 28 of the survey. The last two questions in the survey were open-ended questions. I

asked participants to describe the weakness and strengths of their current or past dental curriculum. These questions were number 29 and 30 of the survey.

Faculty Survey

This survey was a similar survey to the students and practicing dentists. It contained 33 questions divided in four sections, the measurement scale was a six point Likert Scale, and the last two questions were open ended questions. It is described as follows:

Demographics. This section included the first six questions of the survey. The first section of this survey was focused on participant demographics being identical to the other surveys. In this section, I asked them about their years of teaching and their training, such as if they were dentists or medical doctors if they had a post-graduate, such as a master's or a Ph. D degree. Similarly, there is a question to learn if they teach, as well as if they practice. The last question in this section seeked to know if they had any specialty areas.

Dental competencies. The dental competency section is identical to the students' and practicing dentist's surveys and generally asking the same questions from the faculty point of view. The faculty had to rate their level of confidence that they had taught students each ADA competency. This section goes from question number nine to question number 17.

Dental clinical skills. This section was identical to the other surveys, and explored participants' perceptions regarding their confidence in their student's acquisition and preparation of several dental clinical skills required to practice as general dentists. These skills are: (a) prosthodontics,(b) periodontics, (c) endodontics,(d) oral surgery,(e) operative dentistry,(f) pediatric dentistry, (g) public health, (h) cariology, and (i) orthodontics. Additionally, they had to respond regarding several areas regarding their dental education, such as (a) community service, (b) research, and (e) evidence-based dentistry. This section went from question number 18 to question number 21.

Other components. The fourth section included pre-clinical and clinical uses within detnal programs. In regards to pre-clinical courses, participants had to indicate their level of agreement regarding their program's implementation of pre-clinical courses, the hours implemented, and if they thought these pre-clinical sessions prepared their students effective as future dentists. The pre-clinical areas explored were: (a) dental anatomy, (b) operative dentistry, (c) dental anesthesia, (d) endodontics (e) prosthodontics, (f) periodontics, (g) oral surgery, and (h) biomaterials. The clinical areas explored are:(a) diagnostics, (b) operative dentistry, (c) pediatric dentistry, (d) endodontics, (e) prosthodontics, (f), (g) periodontics, (h) oral surgery, and (i) cariology. This section went from question number 22 to question number 31.

Faculty participants were also asked to indicate their level of agreement that their dental curriculum dedicated time to prepare their students adequately to conduct dental research and to make systematic reviews of literature in any of the dental courses. They had to respond to whether their students can implement the best treatments considering the benefits and harms to particular patients and alternative care options. Additionally, in this section, respondents were asked to indicate if they, as professors taught their students these skills.

In regards to the community service, participants were asked to indicate their level of agreement concerning if the community service in their dental curriculum prepared their students to engage in the community, and as well as to strive to make it a better place. Also, they had to answer if their students can appreciate the influence of socio-cultural and economic forces on oral health care. Additionally, they were asked if they taught their students through community service practices to implement programs regarding health promotion, as well as to understand and cooperate with local and global public health. The last part of this question wanted to understand about curricular and extracurricular experiences related to community service that is implemented in the dental program.

In regards to the teaching strategies, I included two questions. One question asked if the teaching strategies they use were motivating and enriching. Also, the survey offered a list of several teaching strategies for which they had to indicate to what extent they consistently used them to teach their dental students. The strategies used by teachers are diverse, such as if they developed cases and diverse situations related to patients' needs. It was vital to understand if professors used typical class patterns, such as lectures, as well as the use of technologies such as whatsapp chat, facebook, google docs, and teaching online classes. The strategies students need to do were recording videos, reflective journals, brainstorming, watching video tutorials of any material taught. Other strategies explored were cooperative learning, pre-clinical sessions, going to the clinic to help other students working in clinical practices, going to conventions, and taking extracurricular courses inside or outside the campus. Lastly, they had to answer if they encourage their students to participate in research activities, such as presenting clinical posters. Likewise, faculty had to indicate if their students can practice dentistry effectively when they graduate. The last two questions in the survey were open-ended. Participants were asked to describe the weakness and strengths of their current or past dental curriculum. These questions were number 32 and 33 of the surveys.

Industry Professionals' Survey

This survey, was a similar survey to the students, practicing dentists and faculty surveys. However, there was a slightly different version for each group of participants, generally asking the same questions from each group's point of view: students, practicing dentists, faculty, and industry professionals. This survey wanted to explore industry professional's point of view regarding the preparedness of practicing dentists. The difference with this survey was that the last section of the survey regarding program components (preclinical hours, clinical practices, teaching strategies, community service, research, and evidence based-dentistry) was not asked to

industry professionals since they lack knowledge of these variables. The measurement scale was a six-point Likert Scale. It is described as follows:

Demographics. The first section was focused on the participant's demographics and was identical to the other surveys. I placed seven institutions that consisted of the most prominet private centers that hire dentists in the DR. These places were: AMERIDENT, SALUD BUCAL, ODONTODOM, ODONTOTEC, ORTHORAl. These are private dental institutions dedicated to attending patients with insurance, and I placed these names because they are characterized for hiring recent dental graduates. There was also a question intended to know if they practice and teach. Also, there was a question to identify their specialty areas in dentistry and other professional areas; in this question, they could select more than one choice. The dental areas were: (a) operative dentistry, (b) prosthodontics, (c) endodontics, (d) periodontics,(e) public health, (f) oral surgery, (g) oral and maxillofacial surgery, (h) pediatric dentistry, (i) forensic dentistry, (j) oral pathology, and (k) orthodontist. Lastly, they were asked if they have a master's in higher education or a master's in business administration. This section included the first seven questions of the survey.

Dental competencies. The dental competency section corresponded to the second section of this survey. This section was identical to the students, practicing dentists, and faculty surveys and generally asking the same questions from the industry professional's point of view. The industry professionals had to rate their level of confidence regarding each ADA's competencies and the practicing dentist's preparedness regarding the practice of dentistry. This section went from question number eight to question number 16.

Dental clinical skills. This section was identical to other surveys. Respondents were asked their perceptions regarding their confidence in their dentists supervised or hired, acquisition and preparation of several dental clinical skills required to practice as general dentists. These

skills were: (a) prosthodontics, (b) periodontics, (c) endodontics, (d) oral surgery, (e) operative dentistry, (f) pediatric dentistry, (g) public health, (h) cariology, and (i) orthodontics. Additionally, they have to respond regarding several areas regarding their dental education, such as (a) community service, (b) research, and (e) evidence-based dentistry. This section went from question number 17 to question number 20.

Overall university preparation. In this section, participants were asked to rate their level of confidence about the dentist's university preparation. They had to select from a group of universities participating in the study, indicating the extent to which their dental graduates demonstrate required competencies. Although the students' and faculty participants were from only nine universities, this section listed all 11 schools of dentistry that had dental graduates with at least five years since graduation. The universities listed include: UNIBE, UNPHU, PUCCMM (Santo Domingo), PUCMM (Santiago), UOD, UFHEC, UNIREMHOS, UASD, UCE, UCATECI, and UCNE. This section included the last question of the survey, which was question number 21.

Data Analysis

I imported all the data from the online survey platform and analyzed using IBM SPSS Statistics 26.0 (Statistical Product and Service Solutions). The distribution of summary scores were described using the mean (+/- standard deviation), and medians (interquartile range). Each item was analyzed separately, with frequencies for each response. To evaluate questions consistency for each summary score, Cronbach's alpha was calculated. Further, for my research question two, ANOVA or Kruskal-Wallis test was used to compare the summary scores for four stakeholder groups. ANOVA assumptions were checked using the Shapiro-Wilk test (for normality) and Bartlett's test (for equality of variances). Pairwise comparisons were conducted using Bonferroni and Tukey posthoc procedures (for ANOVA) and Dunn's test (for Kruskal-Wallis).

Regression analysis was used to evaluate the association between the dependent variables and the independent variables while controlling for potential confounders. The distribution of the outcomes was evaluated graphically and using formal normality tests, to determine the type of regression for the research question three. Regression analysis was used to evaluate the association between the competencies and clinical skills and dental program preclinical and clinical components while controlling for potential confounders. To answer this question, I used for each model, as independent variables the respondents' perceptions (students, practicing dentists, and faculty) of the degree to which the preclinical components or clinical components of the program prepared them (students or graduates) to practice (8 preclinical courses and 8 clinical courses). The other independent variable in the models was the dummy variable for the institution the respondents identified. The dependent variables were the ADA clinical competencies summary score in one model and the other model's clinical skills summary score. In research questions one and two, I observed that the university affected the acquisition of competencies and clinical skills in all participants. Thus, I also used the university as a third variable to explore its influences on independent (8 preclinical courses and 8 clinical courses) and dependent variables (competencies and clinical skills summary scores).

A multiple linear regression (MLR) analysis was used to test if various program preclinical and clinical dental program components (independent variables) significantly predicted participants' ratings of competencies and clinical skills (dependent variables). MLR analysis was run for the students, practicing dentists, and faculty groups to predict the perceived acquired competencies ad clinical skills. Regarding the survey section related to program components, it was not asked for industry professionals because they lack knowledge of this subject. Models with different sets of predictors were evaluated using model fit statistics. I used a

stepwise selection method to keep only the significant preclinical and clinical dental program components and other program components in the model.

Variables

There were 25 critical variables in this study, as broken into four categories: (a) eight dental competencies, (b) nine clinical skills, (c) nine dental program components, and (d) the university program they attended. Each of these 25 variables was created by collapsing multiple items on the survey regarding that construct. Table 2 list these variables

Table 2

Major Variables in the Study

Variables	Construct Variables	Survey Items to Collapse
Dependent Variables (DV)	Dental Competencies Studied	
	1-Critical Thinking and Problem Solving	Section 2, items a to f
	2-Self-Directed Learning and Health Care Promotion	Section 2 items a to e
	3 Communication and Interpersonal Skills	Section 2, items a to e
	4-Practice Management and Informatics	Section 2, items a to e
	5-Patient Care	Section 2, items a to e
	6-Evidence-Based Dentistry (EBD)	Section 2, items a to e
	7-Maintenance of oral health	Section 2, items a to i
	8-Professionalism	Section 2, items a to i
	Clinical Skills Explored	
	1-Periodontics	Section 3, Q17, items a to e
	2-Pediatric Dentistry	Section 3, Q17, items a to e
	3-Restorative Dentistry	Section 3, Q 17, items a to e
	4-Endodontics	Section 3, Q 17, items a to e
	5-Prosthodontics	Section 3, Q 18, items a to i
	6-Oral Surgery	Section 3, Q 18, items a to i
	7-Orthodontics	Section 3, Q 19, items a to e
	8-Cariology	Section 3, Q 19, items a to e
	9-Public Health	Section 3, Q 18, items a to i

Table 2 - Continued

Variables	Construct Variables	Survey Items to Collapse
Independent Variables (IV)	Dental Program Components Explored	
	1-Pre-clinical components (dental anatomy, operative dentistry, dental anesthesia, endodontics prosthodontics, periodontics, oral surgery, and biomaterials	Section 4, Q21, 22, items a to
	2-Solve Problems, implementing best Treatment, Critical thinking, seek solutions, Conducting dental research, Systematic review, Best treatment benefits, and harms	Section 4, Q 23, items a to g
	3-Clinical components	Section 4, Q 27, items a to j
	4-Research	Section 4, Q 23 item e
	5-Evidence based-dentistry	Section 4, Q, 23 item b
	6-Community service	Section 4, Q 24, items, a to f
	7-Public Health	Section 4, Q 27, item j
	8-Innovative teaching strategies (cases to solve problems, lectures, on-line classes, WhatsApp chat, google docs, Facet record videos, reflective journals, brainstorming, watch vide tutorials, cooperative learning, pre-clinical sessions,going to the clinic, going to convention inside and out site campus, doing posters)	Section 4, Q 26, items a to m
	9-Motivating and enriching experiences related to teaching/learning	Section 4, Q 25
	10- Overall Preparation	Section 4, Q 28
	11-Dominican Schools of Dentistry	
	1-UNIBE	Section 1, Q 7, item a
	2-UNPHU	Section 1, Q 7, item b
	3-(a) PUCCMM (Santo Domingo)	Section 1, Q, 7 item c
	3-(b) PUCMM (Santiago)	Section 1, Q 7, item d
	4-UOD	Section 1, Q 7, ítem e
	5-UFHEC	Section 1, Q 7, ítem f
	6-UNIREMHOS	Section 1, Q 7, ítem g
	7-UASD	Section 1, Q 7, ítem h
	8-UCE	Section 1, Q 7, ítem i
	9-UCATECI	Section 1, Q 7, item j
	10-UCNE	Section 1, Q 7, ítem

Note: Major Variables

Research Question 1

The first research question asked sought the perceptions of DR dental faculty, dental students, practicing dentists, and industry professionals in dentistry, regarding student's current acquisition of competencies and clinical skills to treat patients. This question also included program components such as the current incorporation of pre-clinical and clinical components, including evidence-based dentistry, community service, innovative pedagogical strategies, and incorporation of research into the dental program. For this question, the distribution of summary scores was utilized using the mean (+/- standard deviation) and medians (interquartile range). Cronbach's alpha coefficient was calculated for each section to evaluate the consistency of questions included in the summary scores. The Cronbach's measures was used to eliminate any irrelevant or unrelated questions from the calculation of the summary score.

Research Question 2

The second research question asked students about the similarities and differences between the four stakeholder groups and their perceptions regarding student's current acquisition of competencies and clinical skills to treat patients and other pre-clinical and clinical dental program components. One-Way ANOVA or a non-parametric Kruskal-Wallis test was used to explore any differences in competency attainment and clinical skills to treat patients and other pre-clinical and clinical dental program components between the four stakeholder groups. It was explored based on their level of confidence (see Table 3 for a detailed view of the crosswalk table per research questions and statistical analysis). The assumptions of ANOVA (normality of the distribution and homoscedasticity) were checked using the Shapiro-Wilk and Bartlett's test, correspondingly. If the assumptions of ANOVA were met, further analysis included Bonferroni and Tukey posthoc procedures for pairwise comparisons between the groups. If any of the

assumptions for ANOVA were violated, a non-parametric Kruskal-Wallis was preferred, with the pairwise comparisons conducted using Dunn's test (Elliott & Hynan, 2011).

Research Question 3

The third research question asked the extent to which various program preclinical and clinical dental program components predicted the perceived acquired competencies and clinical skills. This question showed which of the dental components was related to the acquisition of competencies and clinical skills since this question was testing predictions. The regression model was a suitable test because it examined the relationship between the dependent variables and the independent variables, which was the predictor. This analysis included the corresponding component, as well as confounders. The confounders considered were the age, sex of the respondent, time since graduation from dental school, the dental school they studied.

The distribution of the outcomes was evaluated graphically and using formal normality tests, to determine the type of regression for the research question 3. Alternatively, categorization of the original summary scores, using the median, or pre-determined cut-off points, were considered, along with further logistic regression analysis (Lomax & Hahs-Vaughn, 2012). Models with different sets of predictors were evaluated using model fit statistics. I used a stepwise selection method to keep only the significant preclinical and clinical dental program components and other program components in the model.

All data was imported from the online survey platform and analyzed using IBM SPSS Statistics 26.0 (Statistical Product and Service Solutions). See Table 3 for a detailed view of the crosswalk table per research questions and statistical analysis.

Table 3

Crosswalk Table Explaining Research Questions and Statistical Analysis

Research questions	Statistical Analysis
2. What are the similarities and differences between the four stakeholder groups' perceptions regarding students' current acquisition of competencies and clinical skills to treat patients, and other pre-clinical and clinical dental program components?	ANOVA or Kruskal-Wallis test was used to compare the summary scores for four stakeholder groups. ANOVA assumptions were checked using the Shapiro-Wilk test (for normality) and Bartlett's test (for equality of variances). Pairwise comparisons were conducted using Bonferroni and Tukey posthoc procedures (for ANOVA) and Dunn's test (for Kruskal-Wallis)
3. To what extent do various program preclinical and clinical dental program components predict the perceived acquired competencies and clinical skills?	Regression analysis was used to evaluate the association between the competencies and clinical skills and dental program preclinical and clinical components while controlling for potential confounders. To answer this question, I used for each model, as independent variables the respondents' perceptions (students, practicing dentists, and faculty) of the degree to which the preclinical components or clinical components of the program prepared them (students or graduates) to practice (8 preclinical courses and 8 clinical courses). The other independent variable in the models was the dummy variable for the institution the respondents identified. The dependent variables were the ADA clinical competencies summary score in one model and the other model's clinical skills summary score. In research questions one and two, I observed that the university affected the acquisition of competencies and clinical skills in all participants. Thus, I also used the university as a third variable to explore its influences on independent (8 preclinical courses and 8 clinical courses) and dependent variables (competencies and clinical skills summary scores). A multiple linear regression (MLR) analysis was used to test if various program preclinical and clinical dental program components (independent variables) significantly predicted participants' ratings of competencies and clinical skills (dependent variables). MLR analysis was run for the students, practicing dentists, and faculty groups to predict the perceived acquired

Table 31 – Continued

Research questions	Statistical Analysis
	competencies ad clinical skills. Regarding the survey section related to program components, it was not asked for industry professionals because they lack knowledge of this subject. Models with different sets of predictors were evaluated using model fit statistics. I used a stepwise selection method to keep only the significant preclinical and clinical dental program components and other program components in the model.

Note: Crosswalk Table Reyes's Study 2021.

Limitations and Delimitations

In this study, there were several limitations. Although this study was national in its scope, it was still delimited to those participants responding. This study was based solely on perceptions of the participants, and this in itself is subjective. Although the basis for developing the surveys within this study was the "2008 ADEA Competencies for the New General Dentist," the section regarding clinical skills and program components, was researcher-developed. As a result, beyond content validity established via the pilots, these survey sections had no additional validity testing. Additionally, it is essential to be clear that power is the probability of identifying an effect, and this is why it was crucial to obtain the minimum number of respondents required.

Finally, the results of this study were not intended to serve as a comprehensive assessment of the diverse dental curriculums implemented within the DR. Instead, it was intended to provide DR dental school administrators and Ministry leaders a diagnostic picture of the dental situation within the DR as a first step, providing specific information to each participating program regarding their own dental programs, as well as providing overall information to the MESCyT. Such diagnostic data can serve for policy revisions, as well as can be the first step toward a future definition of the core competencies that must be attained by all Dominican dental students before graduation. Results, in turn, might help protect the public from unqualified health practitioners

and enhance the practice of dentistry in the DR by ensuring that the education of dentistry in the DR meets international standards.

Chapter 3 Closure

Chapter 3 has explained the methodology that was used for this study. Also, there was a description of the development and application of the survey instrument. In this chapter, likewise, there is a well-detailed description of each of the surveys that were used, as well as each of the groups of participants, were described. I also included a portion to refer to the data collection process, and the limitations and delimitations of my study were addressed. In addition, I placed a crosswalk table explaining each of the variables involved in my study. Finally, I defined the statistical methods that were used to address the research purposes, which consisted of the summary score for each section were calculated. The distribution of summary scores was utilized using the mean (+/- standard deviation) and medians (interquartile range. The summary score for each section was calculated. Descriptive Statistics were performed using means and standard deviations to evaluate question consistency for each summary score; Cronbach's alpha was calculated. I also calculated the overall competency level of each of the categories or elements that were part of the eight dental competencies, nine clinical skills, nine dental program components, and the university program for each of my four surveys, students, practicing dentists, faculty, and industry professionals.

Each of the 25 critical variables in this study was tested separately. A Univariate ANOVA test was conducted to inspect the similarities and differences in responses among the four participants. I took into account, in the case of students, the university where they were studying—the university where the practicing dentists had graduated; in the case of the faculties, the university where they taught, and in the industry professionals' case, the hired or supervised dentists' university origin.

A chi-square (X^2) analysis was used to test the independence of variables. This test was only conducted for the student, practicing dentists, and faculty responses. An X^2 analysis is a single number that tells a researcher how much difference occurs between the researcher observed counts and the counts the researcher would expect if there were no association at all in the population (McHugh, 2013). The X^2 was also run to see whether distributions of categorical variables vary from each other.

Regarding research question number three, I conducted a regression model to know the extent to which various program components predicted the achievement of competencies and clinical skills. I chose a Multiple Linear Regression (MLR) because it models a linear relationship between the independent variables (IV) and the dependent variables (DV) (Tranmer, & Elliot, 2008). MLR was suitable test because it uses several explanatory variables (IV) as it was this case to predict the outcome of a response variable (DV) (Tranmer, & Elliot, 2008).

Regarding the evaluation of the models with different predictors using model fit statistics (such as Akaike information criterion and Bayesian information criterion), the assumption of normality was inspected through the homogeneity of variances. Also, normality was assessed visually and through normality tests, of which the Shapiro-Wilk test, provided by the SPSS software, was also used. The statistical analysis conducted continued as follows:

The distribution of summary scores was utilized using the mean (+/- standard deviation) and medians (interquartile range). A univariate ANOVA or General Linear Model was explored (between subjects). ANOVA was conducted to compare the summary scores for four stakeholder groups. ANOVA assumptions were tested. The univariate General Linear Model is used when the researcher intends to test models in which there are one dependent variable and multiple independent variables (Keselman et al., 1998). One advantage of this test is that it can estimate the effect size (Keselman et al., 1998). This test allowed me to inspect the achievement of

competencies and clinical skills for each group and measure the variability differences (Keselman et al., 1998). I also checked the Welch's t-test or unequal variances t-test to test the hypothesis that two populations have equal means; however, the assumption of normality was maintained (Kim, 2014). Welch's t-test was conducted to validate the Post hoc comparisons using the Tukey statistic.

The variance analysis was also carried out and validated for the four stakeholder groups, students, practicing dentists, faculties, and industry professionals. The Welch's t-test is used when the researcher attempt to compare the means of three groups, as was in this case (Kim, 2014). Finally, I ran a Kruskal- Wallis analysis because the population of industry professionals was small (42 participants), and the ANOVA could lose statistical power with this population.

Despite this fact, the ANOVA was conducted with industry professionals. After finishing the ANOVA, there were observed statistically significant differences in the survey ($p < 0.05$). However, a post hoc analysis demonstrated that only one item was statistically significant. Hence, I decided to run a Kruskal Wallis non-parametric Test to explore the mean differences. The Kruskal-Wallis one-way statistical analysis-of-variance-by-ranks test (or H test) is used when the researcher aims to conclude whether three or more independent groups are the same or different on some variable of interest when an ordinal level of data or an interval or ratio level of data is available (Chan, & Walmsley, 1997). Thus, the non-parametric analysis was performed using the Kruskal-Wallis statistic to explore competencies and clinical skills achievement of dental graduates from nine DR's dentistry schools, employees, or supervisees by the industry professional's participants in the study. I checked if there was any difference in competency and clinical skills achievement, depending on the university the dentists had graduated from.

A multiple linear regression (MLR) analysis was used to test if various program preclinical, and clinical dental program components (IV) significantly predicted participants'

ratings of competencies and clinical skills (DV). MLR analysis was run for the students, practicing dentists, and faculty groups to predict the perceived acquired competencies ad clinical skills. Regarding the survey section related to program components, it was not asked for industry professionals because they lack knowledge of this subject. Models with different sets of predictors were evaluated using model fit statistics. I used a stepwise selection method to keep only the significant preclinical and clinical dental program components, and other program components in the model. A more detailed description of the analysis conducted is presented in another section of this chapter, where I detail my research questions and results. Chapter 4 will present the results of the data analysis by examining the findings.

CHAPTER IV

RESULTS

My study sought to examine the perceptions of multiple stakeholder groups regarding the current curriculum used in dental schools within the Dominican Republic (DR), and how well it helps students acquire critical competencies and clinical skills. This chapter offers the data analysis results proposed to answer the researched questions. First, I describe the sample to understand the characteristics of the participants. Second, I present the data that supports the validity of the "2008 ADEA Competencies for the New General Dentist." The 2008 ADEA competencies are the primary guide I used for developing my surveys. The ADEA Competencies were translated into Spanish and used as part of the investigations. However, other skills from other countries were also reviewed to enhance my research. For example, dental competencies and clinical skills, such as the competencies document provided by the Australian Dental Council in 2010, as well as the Association of Canadian Faculties of Dentistry's 2007 paper on competencies, and the Dental Council of New Zealand's skills document written in 2012 (Hsu et al., 2015). Likewise, I reviewed survey examples from previous research assessing students' perceptions regarding their acquisition of critical dental competencies and clinical skills in their dental education (ADEA, 2016; Albino et al., 2008; Alcota et al., 2016; Haden et al., 2010; Hsu et al., 2015).

These surveys consisted of specific competency and clinical skills statements divided into four sections (demographics, competencies, clinical skills, and program components). There was a slightly different version for each group of participants, generally asking the same questions from each group's point of view: students, practicing dentists, faculty, and industry professionals. The last section of the survey regarding program components (preclinical hours and preclinical

courses, clinical practices, teaching strategies, community service, research, and evidence based-dentistry) was not asked for industry professionals' knowledge of these variables.

The measurement for each section was a six-point Likert scale. In regards to competency and clinical skills, participants rated their confidence (1=not at all confident, 2= only slightly confident, 3=somewhat confident, 4=moderately confident, 5=strongly confident, and 6=100% confident). In regards to the last section, program components, participants indicated their level of agreement because this was more appropriate for the type of questions I was asking (1= strongly disagree, 2= moderately disagree, 3=slightly disagree, 4= slightly agree, 5= moderately agree, and 6=strongly agree). The research design was a quantitative approach using online and hard copy surveys and a convenience sample method. Additionally, demographic data was collected from each respondent. A more detailed description of the analysis conducted is presented in another section of this chapter, where I detail my research questions and results.

Description of the Population

The data for this research was gathered during the Spring 2020 semester. This study's population was all dental students, faculty within nine DR's schools of dentistry, practicing dentists with a maximum of five years of graduation from a DR dental school, and industry professionals who were hiring or supervising DR dentists and volunteered to participate. Although I planned to conduct a national survey in 11 Dominican schools of dentistry, one university with its two campuses offering dentistry declined to participate. Data were collected over three weeks in March 2020. I was not able to collect as many surveys as I wanted due to the response to COVID-19. However, I gathered enough information to do a detailed analysis. For three groups – students, practicing dentists, and faculty. I almost met all the participants expected. Although they wanted to help me gather the data, one of the universities did not have an organized process inside its structure to gather enough student participants. Still, I had faculty

from this university that filled out the surveys (See Appendix M with participants' demographics).

It has to be noted that I found some difficulties in gathering the data. First, not all participants felt comfortable completing an electronic survey. Out of 400 surveys collected, 250 were gathered through hard copies, as I described in the initial analysis. In the case of the hard copies, I had to input all surveys to the electronic format, except for 50 of these surveys that one assistant helped me by transcribing into google forms format. One strategy I found useful to overcome the refusal to participate in the study was to allow participants to take the hard copy surveys home to complete. This strategy allowed me to gather almost all the data for three of the four stakeholder groups (students, practicing dentists, and faculty) to achieve a representative response set (See Appendix M with participants' demographics).

All the industry professionals' surveys were filed electronically. In this case, I only had 42 participants. However, despite that there were only 42 industry professionals participants, many of them were hiring or supervising several doctors from different universities. I know this information because they were asked to answer if they hired dental graduates from several universities, also they had to identify the university name where these dentists had graduated, and finally, they also had to provide their perceptions regarding their performance. Although I did not meet the industry professionals' population, their opinions regarding their employees or supervisees were perfect for my study because all dental schools were represented with dental graduates working by my 42 participants. Their opinions enriched this study. For this, I used a convenience sample method, as proposed in my initial design. A more detailed description of my participants follows in the following paragraphs.

Students

The students asked to participate were enrolled in a Dominican dental program during the 2019/2020 academic year and required completion of their dental plan's final clinical cycle. Because one of the universities with two campuses offering dentistry declined to participate, the initial population of such students that was about 543 students had to be changed (See Table 1 in chapter three). The final population was 397 students. For a 95% confidence level, the estimated sample was 196 (See Figure 3). Despite follow-up letters and meeting the data gathering procedure, only 153 students filled out the surveys and participated in the study. Of the 153 participants in the sample, 21 (13.7 %) were male, and 132 (86.3%) were female. See Appendix M with participants' demographics and the number of students per university participating in the study.

Practicing Dentists

The sample of practicing dentists was limited to those who graduated from a Dominican dental school within the last five years. The total population of potential practicing dentists was about 3,744 (See Table 1 in Chapter three). However, for a 95% level of confidence and a 5% margin error, the estimated sample was 349 (See Figure 3 with Cochran's formula). Regardless of follow-up letters and meeting the data gathering procedure, only 108 practicing dentists filled out the surveys. Of the respondents, 18 (16.7%) were male, and 90 (83.3%) were female, reflecting the female predominance in this profession. The ages range varied for this group but was clustered in the mid-20s. See Appendix M with participants' demographics and the number of practicing dentists by university and type of university.

Faculty

The final population of the Dominican dental schools' faculty was 478 faculties. For a 95% level of confidence and a 5% margin error, the estimated sample needed to be 214 (See

Figure 3 with Cochran's formula). Despite follow-up letters and meeting the data gathering procedure, only 153 faculties filled out the surveys. The faculty demographics are shown in Appendix M.

Industry Professionals

The final group, industry professionals, consisted of professionals from throughout the DR who currently hire or supervise Dominican dentists. These professionals were selected from the essential oral health care centers within the DR and represented all dental industry segments, including private centers, public centers, hospitals, and insurance oral health centers. As representatives of the dental industry sector and representatives of the public sector, the owners, or supervisors of these centers, were invited to complete the survey. The total initial potential population of industry professionals was about 100. So, for a 95% level of confidence and a 5% margin error, the estimated population was 80 (See Figure 3 with Cochran's formula in Chapter Three). Despite follow-up letters and meeting the data gathering procedure, only 42 industry professionals participated in the study.

The industry professionals sample had 18 (11.8 %) males and 24 (15.7 %) females, reflecting the female predominance in this profession. The age range distribution for this group was 27 to 62 years. See Appendix M with participant's demographics. Regarding their professions, most were Dentists, a few had medical degrees, and most did not respond. The results of the professionals' work sites are shown in Appendix M with the participant's demographics. These 42 industry professionals hired or supervised dentists from all the universities that currently teach dentistry in the DR, and overall they hired or supervised dentists that were graduated from at least five different universities.

Instrument Validity and Reliability for the DR Context

The 2008 ADEA competencies were the primary guide for developing my surveys. ADEA Competencies were translated into Spanish and were used as part of the investigations. I also reviewed some other items from other countries' dental competencies and clinical skills, such as the competencies document provided by the Australian Dental Council in 2010, as well as the Association of Canadian Faculties of Dentistry's 2007 paper of competencies, and the Dental Council of New Zealand's skills document written in 2012 (Hsu et al., 2015). Likewise, I looked for survey examples from previous research assessing student's perceptions regarding their acquisition of critical dental competencies and clinical skills in their dental education (ADEA, 2016; Albino et al., 2008; Alcota et al., 2016; Haden et al., 2010; Hsu et al., 2015).

These surveys consisted of specific competency and clinical skills statements divided into four sections (demographics, competencies, clinical skills, and program components). There was a slightly different version for each group of participants, generally asking the same questions from each group's point of view: students, practicing dentists, faculty, and industry professionals. The last section of the survey regarding program components (preclinical hours, clinical practices, teaching strategies, community service, research, and evidence based-dentistry) was not asked of industry professionals since they lack knowledge of these variables. The final survey instruments (see Appendix H, H-1,J, J-1, K, K-1, L, L-1, L-2, and L-3) consisted of specific competency and clinical skills statements divided into four sections (demographics, competencies, clinical skills, and program components). There was a slightly different version for each group of participants, generally asking the same questions from each group's point of view: students, practicing dentists, faculty, and industry professionals. The last section of the survey regarding program components (preclinical hours, clinical practices, teaching strategies, community service,

research, and evidence based-dentistry) was not asked from industry professionals since they lacked knowledge of these variables.

The measurement for each section was a six-point Likert scale. Participants rated their level of confidence (1=not at all confident, 2= only slightly confident, 3=somewhat confident, 4=moderately confident, 5=strongly confident, and 6=100% confident). Regarding the last section, program components, participants indicated their level of agreement because this was more appropriate for the type of questions I was asking (1= strongly disagree, 2= moderately disagree, 3=slightly disagree, 4= slightly Agree, 5= moderately agree, and 6=strongly agree).

Cronbach's alpha coefficient was calculated for each part of the surveys to evaluate the consistency of questions included in the summary scores. Cronbach's measures were used to eliminate irrelevant or unrelated questions from calculating the summary score. Additionally, I conducted a Cronbach's Alpha test to establish reliability and consistency for each item's cluster on my survey. I ran this test before collapsing them into the broader construct variables (See Table 3 for my research questions and statistics analysis). Cronbach's alpha estimates internal consistency reliability with results that could range from zero to one, dependent on whether there is no internal reliability or if security is perfect (Cronbach, 1951).

Cronbach alpha obtained from each survey separately and the summary of all 400 surveys, as shown in Tables 4 and 5. The index was standardized once the irrelevant questions had been eliminated. The global average value by sector value obtained in the different sections that were explored was placed and weighted from each amount of the six-point Likert scale that was used (1= Not at all confident to the value 6 = 100% sure, in the case of the competencies and clinical skills, and 1=Strongly disagree to 6=Strongly agree, in the case of the program components). The Cronbach's alpha from this study ranged from 0.989 to 0.993, being all almost with similar values, which is very good and resonates with Cronbach's alpha results from all surveys that were 0.916.

In this study, Cronbach's alpha results demonstrated that internal consistency and reliability were validated with the Cronbach alpha results in Tables 4 and 5.

Table 4

Cronbach's Alpha Score by Each Instrument

Types of Surveys	N	Cronbach Alpha	
		Reyes (2021)	All Surveys Reyes (2021)
Students	153	0.98	0.91
Practicing dentists	108	0.99	
Faculty	152	0.98	
Industry Professionals	44	0.99	

Note: Cronbach alpha's values are standardized

Table 5

Summary of Cronbach's Alpha Score Reliability Results for Students, Practicing Dentists, Faculty, and Industry, Medians and Significance

Participants	Chronbach Alpha Not Standardized	Chronbach Alpha Standardized	*M*	*Sig*
Students	0.986	0.989	4.97	0.051
Practicing Dentists	0.975	0,991	5.22	0.051
Faculty	0.983	0.987	4.23	0.051
Industry Professionals	0.985	0.993	4.49	0.051
All Surveys	0.665	0.916	4.62	0.051

Note: no statistical difference *p*-value is ($p > 0.005$)

Research Question 1: What are the perceptions of DR dental students, practicing dentists, faculty, and industry professionals regarding the following: (a) student's current acquisition of competencies and clinical skills to treat patients; and (b) current incorporation of

preclinical and clinical components, including evidence-based dentistry, community service, diverse pedagogical strategies, and incorporation of research into the dental program?

My first research question asked participants the perceptions of DR dental faculty, dental students, practicing dentists, and industry professionals in dentistry, regarding the student's current acquisition of competencies and clinical skills. This question also included program components such as the ongoing incorporation of pre-clinical and clinical elements, including evidence-based dentistry, community service, innovative pedagogical strategies, and research into the dental program. To assess the perceived competencies and clinical skills level, as well as the program components level that helped the dental students acquire competencies, I asked my participants to complete an online survey or hard copy surveys through a convenience sample method (with Spanish translation), as explained in the section regarding instrument validity and reliability for the DR context.

Regarding parts a. and b. of this question, I conducted descriptive statistics, including calculating means, frequencies, and standard deviations for each survey item of each of the surveys, dental students, practicing dentists, faculty, and industry professionals. This study had 25 critical variables, as broken into four categories: eight dental competencies and nine clinical skills, nine dental program components, and the university program they attended. Each of the four stakeholder groups' perceptions was explored separately, and checked their mean scores and standard deviation scores. Each section's summary score was calculated and described using the mean (+/- standard deviation). The overall competency level for each of the elements that were part of the four categories: eight dental competencies and nine clinical skills, nine dental program components, and the university program they attended were obtained separately. For all the analysis of this question, a probability value was obtained ($p > 0.05$) equivalent to 0.95 of statistical significance (95% reliability, only 5% error), validating the data collection instrument

for each of the four stakeholder groups. The overall competency and clinical skills level were obtained. Results indicated that, according to the students, practicing dentists, faculties, and industry professionals, DR dental students acquire the competencies and clinical skills to treat patients. Overall, non-significant differences were found in all surveys (students, practicing dentists, faculty, and industry professionals, ($p > 0.05$). Also, I checked if the program component helped students to acquire competencies.

Overall, non-significant differences were found in all surveys (students, practicing dentists, faculty, and industry professionals, ($p > 0.05$). However, despite these results, in some elements that were part of a competency, clinical skill, or program component, I detected significant differences in the four stakeholder groups (students, practicing dentists, faculty, and industry professionals, ($p > 0.05$). To better understand the results obtained, I present both parts a. and b. of this question, divided by each population, and the competencies attained, the clinical skills, and, finally, the program components inspected in this study.

Students results. This question was divided into two parts. For part a of the question, students' respondents were asked questions regarding acquiring the eight competencies and the nine clinical skills. It can be observed that mean values in competencies and clinical skills are reasonably good on a 6.0 scale. The overall level of achievement of competencies and their elements is presented in Tables 6,7, 8, 9, 10, 11, and 12.

Table 6

Student's Level of Achievement of Critical Thinking and Problem Solving

Competency Level Critical Thinking and Problem Solving	Mean	*SD*
1. Estimate and integrate emergent trends in health care.	4.16	1.391
2. Use critical thinking skills	4.32	1.291
3. Solve problems in different circumstances	4.25	1.299
4. Distinguish the difficulties in a problem	4.28	1.310
5. Detect strengths and weaknesses of situations.	4.37	1.291
6. Implement the most appropriate option to the resolution of a problem	4.34	1.273

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 7

Student's Level of Achievement of Self-Directed Learning and Health Care Promotion

Competency Level Self-Directed Learning and Health Care Promotion	Mean	*SD*
1. Seek out continued education	4.20	1.232
2. Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.	4.60	1.284
3. Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in the delivery of care.	4.61	1.262
4. Identify risk factors that can affect individuals and the population.	4.88	1.106
5. Respect the beliefs and preferences of all patients.	4.78	1.059

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 8

Student's Level of Achievement of Communication and Interpersonal Skills

Competency Level Communication and interpersonal skills	Mean	*SD*
1. Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.	5.06	1.199
2. Apply psychosocial and social principles in patient- centered health care	4.84	1.259
3. Talk with individuals from diverse populations	5.07	1.252
4. Make decisions even when conditions are uncertain.	4.10	1.496
5. Respect the believes of patients	4.18	1.259

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 9

Student's Level of Achievement of Practice Management and Informatics

Competency Level Practice Management and Informatics	Mean	*SD*
2. Evaluate and manage contemporary models of oral health care management	4.27	1.118
3. Understand principles of risk administration, including informed consent and appropriate record keeping in patient care	4.92	1.230
4. Demonstrate effective business, financial management, and human resource skills	4.26	1.346
5. Understand quality assurance and assessment concepts	4.11	1.16

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 10

Student's Level of Achievement of Patient Care and Evidence Based Dentistry

Competency Level Patient Care	Mean	*SD*
1. Address the needs of the patient as a complete human being.	5.23	1.156
2. Facilitate consultation and referrals with all relevant health care providers	5.21	1.122
3. Manage medical emergencies by using professional judgment	4.89	1.285
4. Provide basic life support and utilize CPR knowledge when needed	4.21	1.463
5. Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects	4.47	1.308
Evidence-Based Dentistry (EBD)		
1. Recognize risk factors that require intervention to prevent disease	4.61	1.187
2. Understand the meaning of Evidence-Based Dentistry	4.67	1.192
3. Evaluate and integrate the best research outcomes with clinical expertise	4.51	1.089
4. Implement strategies for specific patient care scenarios	4.58	1.281
5. Implement a systematic strategy for finding evidence	4.21	1.360

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 11

Student's Level of Establishment and Maintenance of Oral Health

Competency Level Establishment and maintenance of oral health	Mean	*SD*
1.Provide prevention, intervention, and educational strategies	4.94	1.237
2.Participate with dental team members and other health care professionals in the management and health promotion for all patients	4.90	1.322
3.Recognize and appreciate the need to contribute to the improvement of patients oral health	5.03	1.287
4.Capacity to evaluate treatment and its outcomes	4.92	1.282
5.Integrates the informed consent as a common practice	5.08	1.181
6.Utilize universal infection control guidelines for all clinical procedures	4.75	1.330
7.Obtain and interpret patient medical data, including a thorough intra/extra oral examination	5.00	1.187
8 Identify the manifestation of systemic disease and how the disease and it's control may	4.71	1.261

Table 11 – Continued

Competency Level Establishment and maintenance of oral health	Mean	*SD*
affect the delivery of dental care		
9.Prevent, recognize, and manage medical and dental emergencies	4.88	1.221

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 12

Student's Level of Professionalism

Competency Level Professionalism	Mean	*SD*
1.Apply ethical and legal standards in the provision of dental care	4.82	1.295
2.Consult with or refer to professional colleagues when indicated	5.30	1.187
3.Demonstrate business, financial management, and human resource skills	4.30	1.386
4.Provide quality assurance when treating patients	4.98	1.189
5.Display professional behavior	5.24	1.164
6. Consider a patient's well being	5.35	1.103
7.Possess patient's examination skills	5.16	1.165
8.Control patient's pain and anxiety	4.95	1.234

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Besides, students were asked to rate their level of confidence to perform each of the eight competencies studied. They are thinking critically, seeking solutions for problems, learning subjects on their own. Promoting patient's health care, communicating with patients, demonstrating that they are professionals, managing their office businesses, finances, and human resources, taking care of their patient, establishing patient's oral health, maintaining patient's oral health, implementing principles of evidence-based dentistry, and planning and making decisions.

Students had reported an overall competency level of (M = 4.94, SD = 1.19) in this category. These results are shown in Table 13.

Table 13

Competency Level of Achievement According to Students

Item	Competency	Competency Level	
		Mean	*SD*
1	Thinking in a critical way	4.68	1.24
2	Seeking solutions for problems	4.92	1.19
3	Learning subjects on their own	4.62	1.31
4	Promoting patient's health care,	4.84	1.23
5	Communicating with patients	5.11	1.17
6	Demonstrating that they are professionals,	5.20	1.13
7	Managing their office businesses, finances, and human resources	4.62	1.37
8	Implementing principles of evidence-based dentistry (EBD)	5.27	1.03
9	Planning and making decisions	5.22	1.06
	Total	4.94	1.19

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Regarding the question related to clinical skills achievement, there were nine clinical skills explored in this study. Students were asked to rate their confidence in their perception regarding acquiring clinical skills in several dentistry areas required for general dentistry practice. These skills were explored grouped, and each question consisted of several elements that were dedicated to each area, and that identified each zone independently to examine if they could perform it. Regarding the competencies explored, the overall competency level for all competencies is presented in Table 14.

Table 14

Student's Level of Achievement of all Clinical Skills and its Elements

Clinical Skills Level Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.	Mean	*SD*
1. Prevent, diagnose and mange periodontal diseases	4.75	1.137
2. Manage the oral health care of children and adolescents	4.56	1.302
3. Manage the oral health care of adults.	5.00	1.112
4. Manage restorative procedures that preserve tooth structure, maintain function and esthetic	4.99	1.150
5. Diagnose, identify and manage pulpal and peri-radicular diseases	4.76	1.213
Oral Surgery, Prosthodontics, Dental Public Health.		
1. Diagnose and manage oral surgical treatment needs	4.73	1.247
2. Replace missing or defective tooth structure, maintaining function and esthetics	4.73	1.171
3. Evaluate outcomes of comprehensive dental care	4.86	1.155
4. Diagnose and manage developmental occlusal abnormalities	4.41	1.285
5. Prevent, diagnose and manage temporomandibular disorders	3.90	1.454
6. Manage the replacement of teeth for the partially or complete edentulous patient	4.76	1.180
7. Communicate and collaborate with groups and individuals with oral health issues	4.81	1.185
8. Promote good oral health habits in individuals and communities	5.08	1.192
Cariology, Orthodontics.		
1. Prevent and control dental caries	5.26	1.105
2. Develop strategies of assessment and management of dental caries	5.21	1.062
3. Understand Anatomy and Craneo-facial growth and its relation with children's development	4.34	1.387
4. Implement Preventive and Interceptive Orthodontic	3.90	1.529
5. Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics	3.88	1.578

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Regarding the question asked concerning to rate their confidence level for practicing each clinical area effectively individually, Restorative dentistry, Endodontics, Oral Surgery, Preventive dentistry, Orthodontics, Periodontics, Prosthodontics, Cariology, and Public Health, results were

as follows. The clinical skill with a higher score was Preventive dentistry (*M* =5.07, *SD* =1.31). The element with a lower score in this clinical skills group was prosthodontics *M* =4.27, *SD*=.98). The students had reported an overall competency level (*M* =4.66, *SD* = 1.33) in this category. Table 15 shows the clinical skills level of achievement, according to students.

Table 15

Clinical Skills Level of Achievement According to Students

Item	Clinical Skills	Mean	*SD*
1	Restorative dentistry	5.33	1.15
2	Endodontics	5.00	1.00
3	Oral Surgery	4.67	.577
4	Orthodontics	3.00	1.00
5	Periodontics	5.00	1.00
6	Prosthodontics	5.00	1.17
Total	Overall Competency Level	4.66	1.33

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

For part b. of the survey regarding the dental curriculum component (teaching strategies, preclinical/ clinical hours, community service, evidence-based dentistry), students were asked to indicate their agreement regarding the dental curriculum implementation preclinical courses for several dental areas. The areas explored were: Dental Anatomy, Operative dentistry, Dental Anesthesia, Endodontics, Prosthodontics, Periodontics, Oral Surgery, and Biomaterials. The area with a higher score was Endodontics (*M* = 5.10, *SD* = 1.24). The preclinical course with a lower score in this category was Periodontics (*M* = 4.88, *SD* = 1.329). Regarding the hours that their dental curriculum implements in preclinical courses for these dental areas, and if they were enough to teach them how to treat patients, results showed that the area with a higher score was

Dental Anesthesia (*M* = 5.28, *SD* = 1.15). The preclinical course with a lower score in this category was Prosthodontics (*M* = 4.73, *SD* = 1.360). The students had reported an overall competency level (*M* =5.14, *SD* = 1.27) in this category. See Tables 16 with the student's level of agreement regarding the hours' implementation of preclinical courses for these dental areas and the student's level of agreement regarding the preparedness due to preclinical courses for these dental areas.

Table 16

Student's Level of Agreement Regarding the Hours of Pre-Clinical Courses and their Level of Preparedness in these Courses

	Program Component Level	
Hours of Preclinical Courses Implemented in These Dental Areas	Mean	*SD*
1. Dental Anatomy	5.16	1.320
2. Operative dentistry	5.16	1.318
3. Dental Anesthesia	5.28	1.155
4. Endodontics	5.18	1.246
5. Prosthodontics	4.73	1.360
6. Periodontics	5.15	1.245
7. Oral Surgery	5.10	1.268
8. Biomaterials	5.10	1.261
Implementation of Preclinical Courses in These Dental Areas		
1. Dental Anatomy	4.97	1.219
2. Operative dentistry	5.07	1.148
3. Dental Anesthesia	5.09	1.114
4. Endodontics	5.10	1.158
5. Prosthodontics	4.76	1.267
6. Periodontics	4.88	1.329
7. Oral Surgery	4.96	1.256
8. Biomaterials	4.86	1.243
Total	5.14	1.27

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

The next question explored the professors' teaching strategies, identifying if they have effectively taught them how to achieve the eight competencies investigated in this study. The competencies explored were: learning to solve problems, implementing the best patient treatments, and considering the benefits and disadvantages of alternative care options. Think critically, seek solutions to cases, conduct dental research, conduct systematic reviews of the literature in any of their dental courses, and implement best patient treatments considering the benefits and harms of alternative care options. The overall score was (M = 4.83, SD =1.14). Results are presented in Table 17 with the student's agreement regarding their preparedness in several competencies.

Table 17

Student's Level of Agreement Regarding their Preparedness in Several Competencies

Student's Level of Preparedness	Program Component Level	My Professors have taught me how to effectively
	Mean	*SD*
1.Solve problems	4.95	1.163
2.Implementing best patient's treatments considering benefits and harms of alternative care options	4.93	1.201
3.Think in a critical way	5.11	1.073
4.Seek solutions to cases	5.24	1.151
5. Conducting dental research	4.25	1.038
6. Systematic reviews of the literature in any of my dental courses.	4.50	1.268
Total	4.83	1.14

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

According to students, the overall score of the teaching strategies implemented to teach dentistry was (M = 4.84, SD =1.18). See Table 18 with this data.

Table 18

Teaching Strategies Implemented to Teach Dentistry According to Students

		Teaching Strategy Level	
Item	Teaching Strategies	Mean	*SD*
1	Cases to Solve problems	4.90	1.21
2	Lectures	5.23	1.04
3	Recording videos	4.58	1.25
4	I had to do reflective journals	4.37	1.39
5	Brain storming	4.76	1.19
6	Video tutorials of any material taught	4.76	1.16
7	Technology such as WhatsApp chat, face book, google docs, etc	4.93	1.12
8	Online classes	4.42	1.52
9	Cooperative learning	4.88	1.09
10	Preclinical sessions	5.25	1.04
11	Perform clinical rotations to help students who are working in the clinical areas	5.27	1.02
12	Attend to conventions and extracurricular courses outside or inside the university	5.20	.98
13	Doing posters	4.37	1.40
	Total	4.84	1.18

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Regarding the implementation of community service, it was explored independently. The student had reported an overall competency level (M =4.51, SD = 1.23) in this category. Table 19 shows the mean scores and standard deviation scores of the preparedness due to community service implementation.

Table 19

Student's Level of Preparedness Due to the Implementation of Community Service

Implementation of Community Service	Program Component Level Mean	*SD*
1. Being engaged in the community and strive to make it a better place	5.02	1.184
2. To appreciate the influence of social, cultural, and economic forces on oral health care	5.02	1.067
3. Health Promotion	5.19	1.134
4. To understand and cooperate to Local and Global Public Health	5.08	1.091
5. Experiences in Community Health as part of my dental curriculum	5.05	1.126
6. Extracurricular experiences in community health during my life as student	4.96	1.191
Total	4.51	1.23

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Also, students were asked regarding clinical areas and their preparedness to effectively treat patients. The student had reported an overall competency level (M =5.15, SD = 1.08) in this category. Table 20 shows the mean scores and standard deviation scores of each clinical area investigated.

Table 20

Preparedness Level in Each Clinical Area According to Students

Item	Clinical Skills Achievement	Mean	*SD*
1	Diagnostics	5.20	1.05
2	Operative dentistry	5.21	1.03
3	Pediatric Dentistry	5.14	1.02
4	Endodontics	5.20	1.02
5	Prosthodontics	5.05	1.10
6	Periodontics	5.18	1.13

Table 20 - Continued

Item	Clinical Skills Achievement	Mean	*SD*
7	Oral Surgery	5.23	1.03
8	Cariology	5.14	1.17
9	Public health	5.08	1.19
	Total	5.15	1.08

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

The last question asked them regarding the overall preparedness to practice dentistry.

Results indicated that they agree they are prepared to practice dentistry effectively according to the student's perception. See Table 21 with these data.

Table 21

Student's Overall Level of Preparedness

	Overall Level of Competency and Clinical Skills	
Preparedness	Mean	*SD*
I perceive I can Practice dentistry	5.42	1.01

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree,

The Practicing dentists' results. This question was divided into two parts. For part a. of the question, Practicing dentists' respondents were asked questions regarding acquiring the eight competencies and the nine clinical skills. It can be observed that mean values in competencies and clinical skills are reasonably good on a 6.0 scale. For part a. of the survey, regarding the acquisition of competencies and clinical skills, the overall practicing dentist's level of achievement of competencies and its elements is presented in Table 22.

Table 22

Practicing Dentists' Level of Achievement of all Competencies and its Elements

Competency Level	Mean	*SD*
Critical Thinking and Problem Solving		
1. Estimate and integrate emergent trends in health care.	5.08	.890
2. Use critical thinking skills	4.98	1.015
3. Solve problems in different circumstances	4.98	1.015
4. Distinguish the difficulties in a problem	5.09	.974
5. Detect strengths and weaknesses of situations.	5.08	.890
6. Implement the most appropriate option to the resolution of a problem	5.03	1.218
Self-Directed Learning and Health Care Promotion		
1. Seek out continued education	4.88	1.181
2. Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.	5.24	.949
3. Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in the delivery of care.	5.21	1.045
4. Identify risk factors that can affect individuals and the population.	5.50	.984
5. Respect the beliefs and preferences of all patients.	5.40	.864
Communication and interpersonal skills		
1. Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.	5.23	.923
2. Apply psychosocial and social principles in patient- centered health care	5.28	1.043
3. Talk with individuals from diverse populations	4.52	1.273
4. Make decisions even when conditions are uncertain.	4.64	1.180
Practice Management and Informatics	4.39	1.259
1. Evaluate and apply contemporary and emerging information	4.55	1.178
2. Evaluate and manage contemporary models of oral health care management	5.25	.883
3. Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.	4.35	1.214
4. Demonstrate effective business, financial management, and human resource skills	5.23	.946
5. Understand quality assurance and assessment concepts		
Patient Care		
1. Address the needs of the patient as a complete human being.	5.54	.928
2. Facilitate consultation and referrals with all relevant health care providers	5.11	1.132
3. Manage medical emergencies by using professional judgment	4.45	1.239
4. Provide basic life support and utilize CPR knowledge when needed.	4.76	1.229

Table 22 - Continued

Competency Level	Mean	*SD*
Patient Care		
5. Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects	4.98	1.056
Evidence-Based Dentistry (EBD)		
1. Recognize risk factors that require intervention to prevent disease	4.98	1.056
2. Understand the meaning of Evidence-Based Dentistry	5.14	1.139
3. Evaluate and integrate the best research outcomes with clinical expertise	4.94	1.084
4. Implement strategies for specific patient care scenarios	4.90	1.031
5. Implement a systematic strategy for finding evidence	4.63	1.154
Establishment and maintenance of oral health		
1. Provide prevention, intervention, and educational strategies	5.10	1.041
2. Participate with dental team members and other health care professionals in the management and health promotion for all patients	5.27	1.119
3. Recognize and appreciate the need to contribute to the improvement of patients oral health	5.38	.987
4. Capacity to evaluate treatment and its outcomes	5.33	.981
5. Integrates the informed consent as a common practice	5.10	1.294
6. Utilize universal infection control guidelines for all clinical procedures	5.27	.989
7. Obtain and interpret patient medical data, including a thorough intra/extra oral examination	5.30	1.037
8. Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care	5.03	1.156
9. Prevent, recognize, and manage medical and dental emergencies	4.91	1.152
Professionalism		
1. Apply ethical and legal standards in the provision of dental care	5.34	.993
2. Consult with or refer to professional colleagues when indicated	5.54	.882
3. Demonstrate business, financial management, and human resource skills	4.68	1.218
4. Provide quality assurance when treating patients	5.47	.833
5. Display professional behavior	5.66	.806
6. Consider a patient's well being	5.63	.824
7. Possess patient's examination skills	5.42	1.002
8. Control patient's pain and anxiety	5.23	1.010

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Besides, practicing dentists were asked to rate their confidence level to perform each of the eight competencies studied. These competencies were: the ability to thinking critically, seeking solutions for problems, learning subjects on their own, promoting patient's health care. Communicating with patients, demonstrating that they are professionals, managing their office businesses, finances, and human resources, taking care of their patients, establishing patients' oral health, maintaining patient's oral health, and implementing evidence-based dentistry principles, and planning and making decisions. In addition, practicing dentists reported an overall competency level of (M = 5.25, SD = 0.97) in this category. These results are shown in Table 23.

Table 23

Competency Level of Achievement According to Practicing Dentists

		Competency Level	
Item	Competency	Mean	*SD*
1	Thinking in a critical way	5.27	1.08
2	Seeking solutions for problems	5.30	1.00
3	Learning subjects on their own	5.08	1.08
4	Promoting patient's health care,	5.41	.92
5	Communicating with patients	5.51	.194
6	Demonstrating that they are professionals,	5.20	1.13
7	Managing their office businesses, finances, and human resources	4.73	1.21
8	Implementing principles of evidence-based dentistry (EBD)	5.32	1.19
9	Planning and making decisions	5.44	.96
	Total	5.25	0.97

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Regarding the question related to clinical skills achievement, there were nine clinical skills explored in this study. Practicing dentists were asked to rate their level of confidence in their perception regarding the acquisition of clinical skills in several dentistry areas required for general dentistry practice. These skills were explored grouped, and each question consisted of

several elements that were dedicated to each area and identified each area independently to explore if they could perform it. See Table 24 with the level of achievement of the nine clinical skills explored and their elements.

Table 24

Practicing Dentists' Level of Achievement of the Clinical Skills and its Elements

Clinical Skills	*M*	*SD*
Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics		
1. Prevent, diagnose and mange periodontal diseases	5.09	1.067
2. Manage the oral health care of children and adolescents	4.00	1.00
3. Manage the oral health care of adults.	4.93	1.216
4. Manage restorative procedures that preserve tooth structure, maintain function and esthetic	4.73	1.365
5. Diagnose, identify and manage pulpal and peri-radicular diseases	5.27	.957
Oral Surgery, Prosthodontics, Dental Public Health.		
1. Diagnose and manage oral surgical treatment needs	4.93	1.216
2. Replace missing or defective tooth structure, maintaining function and esthetics	4.73	1.365
3. Evaluate outcomes of comprehensive dental care	5.27	.957
4. Diagnose and manage developmental occlusal abnormalities	4.66	1.280
5. Prevent, diagnose and manage temporomandibular disorders	4.19	1.417
6. Manage the replacement of teeth for the partially or complete edentulous patient	4.66	1.435
7. Communicate and collaborate with groups and individuals with oral health issues	5.23	1.031
8. Promote good oral health habits in individuals and communities	5.51	.858
Cariology, Orthodontics		
1. Prevent and control dental caries	5.38	1.008
2. Develop strategies of assessment and management of dental caries	5.27	1.021
3. Understand Anatomy and Craneo-facial growth and its relation with children's development	4.43	1.492
4. Implement Preventive and Interceptive Orthodontic	4.24	1.627
5. Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics	4.65	1.330

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Regarding the question asked concerning to rate their level of confidence for practicing each clinical area effectively individually, Restorative dentistry, Endodontics, Oral Surgery, Orthodontics, Periodontics, and Prosthodontics, results were as follows. Practicing dentists had reported an overall competency level (*M* =4 .66, *SD* = 0.98) in this category. See Table 25 with these data.

Table 25

Clinical Skills Level of Achievement According to Practicing Dentists

		Clinical Skills Level	
Item	Clinical skills	Mean	*SD*
1	Restorative dentistry	5.33	1.15
2	Endodontics	5.00	1.00
3	Oral Surgery	4.67	.577
4	Orthodontics	3.00	1.00
5	Periodontics	5.00	1.00
6	Prosthodontics	5.00	1.17
	Total	4.66	0.98

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

As it was observed, according to the practicing dentists, DR dental students achieve the clinical skills; however, specifically, Orthodontics should be addressed as identified to have obtained lower scores in this category.

For part b. of the survey regarding dental curriculum component (teaching strategies, preclinical/ clinical hours, community service, evidence-based dentistry), practicing dentists respondents were asked to indicate their agreement regarding the dental curriculum's implementation of preclinical courses for several dental areas. Practicing dentists reported an

overall competency level of (*M* = 5.09, *SD* =1.24) in this category. The areas explored were: Dental Anatomy, Operative dentistry, Dental Anesthesia, Endodontics, Prosthodontics, Periodontics, Oral Surgery, and Biomaterials. See Table 26 with these data.

Table 26

Practicing Dentists' Level of Agreement Regarding the Hours of Preclinical Courses Implemented

Implementation of Preclinical Courses for These Dental Areas	Program Component Level	
Pre-Clinical Courses	Mean	*SD*
1. Dental Anatomy	5.03	1.341
2. Operative dentistry	5.22	1.163
3. Dental Anesthesia	5.24	1.167
4. Endodontics	5.27	1.147
5. Prosthodontics	4.93	1.199
6. Periodontics	5.00	1.223
7. Oral Surgery	5.07	1.347
8. Biomaterials	4.97	1.380
Total	5.09	1.24

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

The next question explored the professors' teaching strategies, identifying if they have effectively taught them how to achieve the eight competencies investigated in this study. The skills explored were: learning to solve problems, implementing the best patient treatments, and considering the benefits and disadvantages of alternative care options. Also, thinking critically, seeking solutions to cases, conducting dental research, conducting systematic reviews of the literature in any of their dental courses, and implementing best patient treatments considering the benefits and disadvantages of alternative care options. Practicing dentists had reported an overall competency level of (*M* = 4.87, *SD* = 1.24) in this category. See Table 27 with these results.

Table 27

Practicing Dentists' Level of Agreement Regarding their Preparedness in Several Competencies

My Professors have taught me how to effectively	Mean	*SD*
1. Solve problems	4.42	1.366
2. Implementing best patient's treatments considering benefits and harms of alternative care options	4.58	1.441
3. Think in a critical way	5.03	1.156
4. Seek solutions to cases	5.01	1.183
5. Conducting dental research	5.08	1.102
6. Systematic reviews of the literature in any of my dental courses.	5.14	1.236
Total	4.87	1.24

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Regarding the implementation of community service, it was explored independently. Practicing dentists had to indicate if their dental curriculum's community service prepared them adequately for several aspects related to it. Practicing dentists reported an overall competency level of (M = 5.18, SD =1.18) in this category. See Table 28 with these results.

Table 28

Practicing Dentists' Level of Preparedness Due to the Implementation of Community Service

Implementation Of Community Service	Mean	*SD*
1. Being engaged in the community and strive to make it a better place	5.13	1.259
2. To appreciate the influence of social, cultural, and economic forces on oral health care	5.15	1.205
3. Health Promotion	5.25	1.170
4. To understand and cooperate to Local and Global Public Health	4.94	1.398
5. Experiences in Community Health as part of my dental curriculum	5.42	1.012
6. Extracurricular experiences in community health during my life as student	5.23	1.071
Total	5.18	1.18

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Regarding the teaching strategies, practicing dentists were asked if they were motivating and enriching. Overall the score obtained for this question was (M = 4.67, SD = 0.97). Table 29 shows the mean scores and standard deviation scores of each teaching strategy explored.

Table 29

Teaching Strategies Implemented to Teach Dentistry According to Practicing Dentists

		Teaching Strategies Level	
Item	Teaching Strategies	Mean	*SD*
1	Cases to Solve problems	5.00	1.00
2	Lectures	5.00	1.00
3	Recording videos	3.00	1.00
4	I had to do reflective journals	4.37	1.39
5	Brain storming	3.67	1.52
6	Video tutorials of any material taught	5.67	.577
7	Technology such as WhatsApp chat, face book, google docs, etc	4.33	1.52
8	Online classes	4.67	1.52
9	Cooperative learning	5.00	1.00
10	Preclinical sessions	5.33	1.15
11	Perform clinical rotations to help students who are working in the clinical areas	5.67	.577
12	Attend to conventions and extracurricular courses outside or inside the university	4.67	1.15
13	Doing posters	4.33	1.52
	Total	4.67	0.97

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Also, practicing dentists were asked regarding clinical areas and their preparedness to effectively treat patients. Practicing dentists reported an overall competency level of (M = 5.56, SD = 0.69) in this category. Table 30 shows the mean scores and standard deviation scores of each clinical area investigated.

Table 30

Preparedness Level in Each Clinical Area According to Practicing Dentists

Item	Clinical Skills Achievement	Competency Level	
		Mean	*SD*
1	Diagnostics	5.67	.577
2	Operative dentistry	5.67	.577
3	Pediatric Dentistry	5.67	.577
4	Endodontics	5.67	.577
5	Prosthodontics	5.33	1.15
6	Periodontics	5.67	.577
7	Oral Surgery	5.67	.577
8	Cariology	5.67	.577
9	Public health	5.07	1.10
	Total	5.56	0.69

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Faculty results. For part a. of the survey, the acquisition of competencies and clinical skills, the overall faculty's level of achievement of competencies, and its elements are presented in Table 31.

Table 31

Faculty's Level of Achievement of Competencies and its Elements

	Competency Level	
	Mean	*SD*
Critical Thinking and Problem Solving.	2.16	1.57
1. Estimate and integrate emergent healthcare trends	2.85	1.89
2. Use critical thinking skills	2.00	2.00
3. Solve problems in different circumstances	2.00	2.00
4. Distinguish the difficulties in a problem	2.71	1.41
5. Detect strengths and weaknesses of situations	2.00	1.72
6. Implement the most appropriate option to the resolution of a problem	3.00	182
Self-Directed Learning and Health Care Promotion,		
1. Seek out continued education	2.50	1.29
2. Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.	3.25	1.50
3. Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in the delivery of care.	3.25	.957
4. Identify risk factors that can affect individuals and the population.	3.50	1.91
5. Respect the beliefs and preferences of all patients.	4.25	1.50
Communication and interpersonal skills		
1. Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.	4.25	1.500
2. Apply psychosocial and social principles in patient- centered health care	3.00	2.309
3. Talk with individuals from diverse populations	3.00	1.826
4. Make decisions even when conditions are uncertain.	3.25	2.217

Table 31 – Continued

	Competency Level	
	Mean	*SD*
Practice Management and Informatics		
1. Evaluate and apply contemporary and emerging information	3.50	1.732
2. Evaluate and manage contemporary models of oral health care management	4.00	.816
3. Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.	3.25	1.708
4. Demonstrate effective business, financial management, and human resource skills	4.00	.816
5. Understand quality assurance and assessment concepts	3.75	2.217
Patient Care		
1. Address the needs of the patient as a human being.	3.75	2.21
2. Facilitate consultation and referrals with all relevant health care providers	3.50	2.08
3. Manage medical emergencies by using professional judgment	2.75	2.06
4. Provide basic life support and utilize CPR knowledge when needed.	2.75	2.06
5. Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects	2.75	2.06
Evidence-Based Dentistry (EBD)		
1. Recognize risk factors that require intervention to prevent disease	4.00	.81
2. Understand the meaning of Evidence-Based Dentistry	2.75	2.06
3. Evaluate and integrate the best research outcomes with clinical expertise	4.00	2.16
4. Implement strategies for specific patient care scenarios	4.00	.81
5. Implement a systematic strategy for finding evidence	4.00	.81
Establishment and maintenance of oral health.		
1. Provide prevention, intervention, and educational strategies	3.75	2.06
2. Participate with dental team members and other health care professionals in the management and health promotion for all patients	3..5	2217
3. Recognize and appreciate the need to contribute to the improvement of patients oral health	4.00	1.414

Table 31 – Continued

	Competency Level	
	Mean	*SD*
Establishment and maintenance of oral health.		
4. Capacity to evaluate treatment and its outcomes	3.75	1.500
5. Integrates the informed consent as a common practice	4.25	1.258
6. Utilize universal infection control guidelines for all clinical procedures	4.25	1.258
7. Obtain and interpret patient medical data, including a thorough intra/extra oral examination	4.25	1.258
8. Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care	3.25	1.708
9. Prevent, recognize, and manage medical and dental emergencies	3.25	1.708
Professionalism		
1. Apply ethical and legal standards in the provision of dental care	3.50	2.082
2. Consult with or refer to professional colleagues when indicated	3.75	2..217
3. Demonstrate business, financial management, and human resource skills	3.00	1.633
4. Provide quality assurance when treating patients	3.00	1.826
5. Display professional behavior	3.50	2.380
6. Consider a patient's well being	3.50	2.082
7. Possess patient's examination skills	3.25	1.708
8. Control patient's pain and anxiety	2.25	1.500

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Besides, faculty were also asked to rate their confidence that their students were able to perform each of the eight competencies studied. These competencies were: the ability to thinking critically, seeking solutions for problems, learning subjects on their own, promoting patient's health care. Communicating with patients demonstrates that they are professionals, managing their office businesses, finances, and human resources, taking care of their patients, establishing patients' oral health, maintaining patient's oral health, and implementing evidence-based dentistry principles, and planning and making decisions. The faculty reported an overall competency level for their students (M = 2.45, SD = 1.57) in this category. These results are shown in Table 32.

Table 32

Competency Level of Achievement According to Faculty

Item	Competency	Mean	*SD*
1	Thinking in a critical way	2.33	1.52
2	Seeking solutions for problems	2.33	1.15
3	Learning subjects on their own	2.00	1.73
4	Promoting patient's health care,	2.67	1.52
5	Communicating with patients	2.67	1.52
6	Demonstrating that they are professionals,	3.00	2.00
7	Managing their office businesses, finances, and human resources	1.67	1.15
8	Implementing principles of evidence-based dentistry (EBD)	3.00	2.00
9	Planning and making decisions	2.33	1.52
	Total	2.45	1.57

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

According to the Faculty, DR dental students did not wholly achieve these competencies. Although overall, they said they met the skills, when I examined each element independently, I found differences in the scores given by each of the groups. These competencies should be

considered vital. Faculties are a crucial part of the students' acquisition of skills. So, they would need to address all these elements to improve within their students these competencies.

Regarding the question related to clinical skills achievement, there were nine clinical skills explored in this study. I asked Faculty to rate their confidence level in their perception regarding their student's clinical expertise acquisition in several dentistry areas required to general dentistry practice. These skills were explored grouped, and each question consisted of several elements that were dedicated to each area and identified each area independently to examine if they could perform it. These data are shown in Table 33.

Table 33

Faculty Level of Achievement of Clinical Skills

Clinical Skills	Mean	*SD*
Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.		
1. Prevent, diagnose and manage periodontal diseases	2.75	2.36
2. Manage the oral health care of children and adolescents	3.25	2.06
3. Manage the oral health care of adults.	3.25	2.062
4. Manage restorative procedures that preserve tooth structure, maintain function and esthetic	3.25	2.217
5. Diagnose, identify and manage pulpal and peri-radicular diseases	4.00	2.160
Oral Surgery, Prosthodontics, Dental Public Health.	3.50	2.082
1. Diagnose and manage oral surgical treatment needs	4.00	1.633
2. Replace missing or defective tooth structure, maintaining function and esthetics	4.75	.957
3. Evaluate outcomes of comprehensive dental care	2.75	2.062
4. Diagnose and manage developmental occlusal abnormalities	2.75	2.062
5. Prevent, diagnose and manage temporomandibular disorders	3.00	2.09
6. Manage the replacement of teeth for the partially or complete edentulous patient	4.00	2.160
7. Communicate and collaborate with groups and individuals with oral health issues	3.00	2.449
8. Promote good oral health habits in individuals and communities	3.75	2.062
Cariology, Orthodontics	4.00	2.160
1. Prevent and control dental caries	2.75	2.062
2. Develop strategies of assessment and management of dental caries	2.75	2.062
3. Understand Anatomy and Craneo-facial growth and its relation with children’s development	2.50	1.915

Table 33 – Continued

Clinical Skills	Mean	*SD*
Cariology, Orthodontics		
4. Implement Preventive and Interceptive Orthodontic	2.50	1.915
5. Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics.	4.00	2.160

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 34 offers the overall faculty response regarding each clinical skills explored individually.

Table 34

Overall Clinical Skills Level of Achievement According to Faculty

		Clinical Skills Level	
Item	Clinical skills	Mean	*SD*
1	Restorative dentistry	4.00	2.16
2	Endodontics	3.50	2.08
3	Oral Surgery	3.50	2.08
4	Orthodontics	2.50	1.91
5	Periodontics	2.75	2..36
6	Prosthodontics	3.75	.500

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

According to these faculty, although they said their students accomplished the clinical skills required for dentists, orthodontics' clinical area showed low scores. Similar results are comparable to both students and practicing dentists. The low results can be related to the fact that the DR dental curriculum emphasizes the ethical issues associated with orthodontics' practice regarding is a specialized area and not practiced by general dentists.

For part a. of the faculty survey, dental curriculum component (teaching strategies, preclinical/ clinical hours, community service, evidence-based dentistry), faculty were asked to indicate their agreement regarding the implementation in the dental curriculum of preclinical courses for several dental areas. The areas explored were: Dental Anesthesia (*M* = 3.75, *SD* = 1.89), and Endodontics, Oral Surgery, and Biomaterials with identical scores (*M* = 3.75, *SD* = 2.21). The areas with Lower scores were: Dental Anatomy (*M* = 2.50, *SD* = 1.91), and Restorative dentistry (*M* = 2.75, *SD* = 2.36). In regards to Periodontics, and Prosthodontics obtained identical scores (*M* = 3.25, *SD* = 2.06). Faculty had reported an overall competency level for their students (*M* =3.34, *SD* = 1.86) in this category.

Regarding the hours that their dental curriculum implements in preclinical courses for these dental areas, and if they were enough to teach them how to treat patients, results showed that the higher areas were Periodontics (*M* = 4.75, *SD* = 1.50). The preclinical courses with lower and identical scores in this category were Dental Anesthesia, Restorative dentistry, and Dental Anatomy, with identical scores, respectively (*M* = 3.50, *SD* = 2.08). In regards to Biomaterials, and with identical scores (*M* = 3.75, *SD* = 2.17). Oral Surgery obtained (*M* = 4.50, *SD* = 1.73). Faculty had reported an overall competency level for their students (*M* =3.53, *SD* = 1.95) in this category. These values are low.

Regarding the question related to exploring if they have instructed their students to achieve the competencies investigated in this study, Table35 shows the preparedness level in this category. However, faculty had reported an overall competency level for their students (*M* =4.20, *SD* = 2.22) in this category.

Table 35

Faculty Level of Agreement Regarding Students Preparedness in Several Competencies

Faculty's Level of Preparedness	As a professor, I have taught my students how to effectively. Mean	*SD*
1. Solve problems	4.25	2.062
2. Implementing best patient's treatments considering benefits and harms of alternative care options	4.25	2.062
3. Think in a critical way	4.25	2.062
4. Seek solutions to cases	4.00	2.449
5. Conducting dental research	4.25	2.363
6. Systematic reviews of the literature in any of my dental courses.	4.25	2.363
Total	4.20	2.20

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagre2=disagree3=Slightly disagree 4=Slightly agree 5=agree6=Strongly agree

The next question explored the professors' teaching strategies, identifying if they have effectively taught them how to achieve the eight competencies investigated in this study. The skills explored were: learning to solve problems, implementing the best patient treatments, and considering the benefits and disadvantages of alternative care options. Also, thinking critically, seeking solutions to cases, conducting dental research, conducting systematic reviews of the literature in any of their dental courses, and implementing best patient treatments considering the benefits and disadvantages of alternative care options. Results showed that the competency preparedness with a higher score was sought a solution to a case (item No. 7), implementing best patient treatments considering the benefits and harms of alternative care options (M = 5.25, SD = .95). However, the competency with a lower score was item No.3, think critically (M = 4.50, SD =

1.73. Faculty had reported an overall competency level for their students (*M* =3.34, *SD* = 1.86) in this category.

Regarding the implementation of community service, it was explored independently. Faculty had to indicate if their dental curriculum's community service prepared their students adequately for several aspects related to it. Regarding all elements that compound the implementation of community service, the higher score was Item No. 4 (*M* = 5.75, *SD* = .50), related to understand and cooperate with Local and Global Public Health, and identical to being engaged in the community and strive to make it a better place, appreciate the influence of social, cultural, and economic forces on oral health care, and Health Promotion. The element with a lower score in this competency was: item No. 5 (*M* = 4.50, *SD* = 1.73), experiences in Community Health as part of my dental curriculum. Faculty had reported an overall competency level for their students (*M* =4.45, *SD* = 2.98) in this category.

Regarding the teaching strategies that they implement, faculty were asked if they were motivating and enriching. Overall the score obtained for this question was (*M* = 4.75, *SD* = 1.89). These findings are very similar to those given by students and practicing dentists.

Table 36 shows the mean scores and standard deviation scores of each teaching strategy explored regarding the implementation of several teaching strategies. Faculty had reported an overall competency level for their students (*M* =3.95, *SD* = 1.98) in this category.

Table 36

Teaching Strategies Implemented to Teach Dentistry According to Faculty

		Competency Level	
Item	Teaching Strategies	Mean	*SD*
1	Cases to Solve problems	4.50	1.73
2	Lectures	5.00	.81
3	Recording videos	5.00	1.41

Table 36 – Continued

Item	Teaching Strategies	Competency Level	
		Mean	*SD*
4	I had to do reflective journals	4.50	2.38
5	Brain storming	3.50	1.91
6	Video tutorials of any material taught	3.50	1.91
7	Technology such as WhatsApp chat, face book, google docs, etc	4.25	2.21
8	Online classes	4.25	2.21
9	Cooperative learning	4.25	2.21
10	Preclinical sessions	4.25	2.21
11	Perform clinical rotations to help students who are working in the clinical areas	3.75	2.21
12	Attend to conventions and extracurricular courses outside or inside the university	4.25	2.21
13	Doing posters	4.50	2.38
	Total	3.95	1.98

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Also, faculty were asked regarding clinical areas and their student's preparedness to treat patients effectively. The faculty reported an overall competency level for their students (*M* = 4.16, *SD* = 2.32) in this category. Table 37 shows the mean scores and standard deviation scores of each clinical area investigated. Faculty had reported an overall competency level for their students (*M* =4.16, *SD* = 1.61) in this category.

Table 37

Preparedness Level in Each Clinical Area According to Faculty Perception

Item	Clinical Skills Achievement	Competency Level	
		Mean	*SD*
1	Diagnostics	4.00	2.44
2	Operative dentistry	4.25	2.21
3	Pediatric Dentistry	3.75	2.21
4	Endodontics	4.00	2.44
5	Prosthodontics	4.50	2.38

Table 37 – Continued

Item	Clinical Skills Achievement	Competency Level	
		Mean	*SD*
6	Periodontics	4.25	2.36
7	Oral Surgery	4.25	2.36
8	Cariology	4.25	2.21
9	Public health	4.25	2.36
	Total	4.16	1.61

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

The last question asked them regarding the overall preparedness to practice dentistry. Results indicated that according to the faculty's perception, they agree their students are adequately prepared to practice dentistry (*M*=4.25, *SD*=2 .36).

Industry Professionals results. For part a. the acquisition of competencies and clinical skills, the overall Industry Professional's level of achievement of competencies and its elements is presented in Table 38.

Table 38

Industry Professional's Level of Achievement of Competencies and its Elements

Critical Thinking and Problem Solving	Mean	*SD*
1. Estimate and integrate emergent trends in health care.	4.18	1.168
2. Use critical thinking skills	3.91	1.375
3. Solve problems in different circumstances	4.27	1.421
4. Distinguish the difficulties in a problem	4.09	1.221
5. Detect strengths and weaknesses of situations.	4.09	1.136
6. Implement the most appropriate option to the resolution of a problem	4.09	1.221
Self-Directed Learning and Health Care Promotion	**Mean**	***SD***
1.Seek out continued education	4.18	1.328
2. Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.	4.00	1.549
3. Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in the delivery of care.	4.36	1.433
4. Identify risk factors that can affect individuals and the population.	4.27	1.272
5. Respect the beliefs and preferences of all patients.	4.55	1.214

Table 38 – Continued

Communication and Interpersonal Skills	Mean	*SD*
1. Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.	4.36	1.421
2. Apply psychosocial and social principles in patient- centered health care	4.27	1.286
3. Talk with individuals from diverse populations	4.55	1.206
4. Make decisions even when conditions are uncertain.	4.27	1.328

Practice Management and Informatics	Mean	*SD*
1.Evaluate and apply contemporary and emerging information	4.36	1.009
2.Evaluate and manage contemporary models of oral health care management	4.18	1.183
3.Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.	4.45	1.572
4.Demonstrate effective business, financial management, and human resource skills	4.27	1.206
5.Understand quality assurance and assessment concepts	4.00	1.401

Patient Care	Mean	*SD*
1. Address the needs of the patient as a human being.	4.36	1.221
2.Facilitate consultation and referrals with all relevant health care providers	4.18	1.629
3. Manage medical emergencies by using professional judgment	4.27	1.375
4.Provide basic life support and utilize CPR knowledge when needed.	4.09	1.027
5.Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects	3.64	.924

Table 38 – Continued

Evidence Based-Dentistry (EBD)	Mean	*SD*
1.Recognize risk factors that require intervention to prevent disease	4.36	.982
2.Understand the meaning of Evidence-Based Dentistry	4.64	1. 328
3.Evaluate and integrate the best research outcomes with clinical expertise	4.00	1.502
4.Implement strategies for specific patient care scenarios	4..8	1.136
5.Implement a systematic strategy for finding evidence	3.82	1.079

Establishment and maintenance of oral health.	Mean	*SD*
1.Provide prevention, intervention, and educational strategies	4.09	1.206
2.Participate with dental team members and other health care professionals in the management and health promotion for all patients	4.18	1.104
3.Recognize and appreciate the need to contribute to the improvement of patients oral health	4.18	1. 348
4.Capacity to evaluate treatment and its outcomes	3.64	1.044
5.Integrates the informed consent as a common practice	4.27	1.044
6.Utilize universal infection control guidelines for all clinical procedures	3.73	1.286
7.Obtain and interpret patient medical data, including a thorough intra/extra oral examination	4.09	.603
8.Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care	3.91	1.368
9.Prevent, recognize, and manage medical and dental emergencies	4.36	1.206

Table 38 – Continued

Professionalism	Mean	*SD*
1.Apply ethical and legal standards in the provision of dental care	3.55	.647
2.Consult with or refer to professional colleagues when indicated	4.64	1.206
3.Demonstrate business, financial management, and human resource skills	4.73	1.009
4.Provide quality assurance when treating patients	4.73	.944
5.Display professional behavior	4.36	1.300
6. Consider a patient's well being	4.27	1.471
7.Possess patient's examination skills	3.91	1.250
8.Control patient's pain and anxiety	4.09	.809
Professionalism	Mean	*SD*
1.Apply ethical and legal standards in the provision of dental care	4.36	1.286
2.Consult with or refer to professional colleagues when indicated	4.82	.603
3.Demonstrate business, financial management, and human resource skills	3.55	1.368
4.Provide quality assurance when treating patients	4.64	1.206
5.Display professional behavior	4.73	.647
6. Consider a patient's well being	4.73	.647
7.Possess patient's examination skills	4.36	1.206
8.Control patient's pain and anxiety	4.27	1.009

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Besides, industry professionals were also asked to rate their level of confidence that their employees or supervisees were able to perform each of the eight competencies studied. These competencies were: the ability to thinking critically, seeking solutions for problems, learning subjects on their own, promoting patient's health care. Communicating with patients, demonstrating that they are professionals, managing their office businesses, finances, and human resources, taking care of their patients, establishing patients' oral health, maintaining patient's oral health, and implementing evidence-based dentistry principles, and planning and making decisions. Industry professionals have reported an overall competency level for their employees or supervisees (M = 4.15, SD = 1.16). These results are shown in Table 39.

Table 39

Overall Competency Level of Achievement According to Industry Professionals

Item	Competencies	Mean	*SD*
1	Thinking in a critical way	3.91	.94
2	Seeking solutions for problems	4.09	1.30
3	Learning subjects on their own	3.82	1.47
4	Promoting patient's health care,	4.28	1.25
5	Communicating with patients	4.64	.80
6	Demonstrating that they are professionals,	4.36	1.20
7	Managing their office businesses, finances, and human resources	3.73	1.49
8	Implementing principles of evidence-based dentistry (EBD)	4.38	.67
9	Planning and making decisions	4.18	1.32
	Total	4.15	1.16

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Regarding the question related to clinical skills achievement, there were nine clinical skills explored in this study. Industry professionals were asked to rate their level of confidence in their

perception regarding their employees and or supervisee's (dentists) acquisition of the clinical skills in several dentistry areas required for general dentistry practice. These skills were explored grouped. Table 40 shows these data.

Table 40

Clinical Skills Level of Achievement According to Industry Professionals

Clinical Skills	Mean	*SD*
Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.	4.64	.924
1. Prevent, diagnose and mange periodontal diseases	4.36	1.02
2. Manage the oral health care of children and adolescents	4.64	1.206
3. Manage the oral health care of adults.	4.64	.92
4. Manage restorative procedures that preserve tooth structure, maintain function and esthetic	4.36	1.20
5. Diagnose, identify and manage pulpal and peri-radicular diseases	4.64	1.20
Oral Surgery, Prosthodontics, Dental Public Health.	4.55	.93
1. Diagnose and manage oral surgical treatment needs	3.82	1.250
2. Replace missing or defective tooth structure, maintaining function and esthetics	3.55	1.37
3. Evaluate outcomes of comprehensive dental care	3.64	1.36
4. Diagnose and manage developmental occlusal abnormalities	4.73	.91
5. Prevent, diagnose and manage temporomandibular disorders	3.00	1. 265
6. Manage the replacement of teeth for the partially or complete edentulous patient	3.82	1.33
7. Communicate and collaborate with groups and individuals with oral health issues	4.64	.92
8. Promote good oral health habits in individuals and communities	2.36	1.52
Cariology, Orthodontics	3.91	1.37
1. Prevent and control dental caries	3.27	1.61
2. Develop strategies of assessment and management of dental caries	3.82	1.25
3. Understand Anatomy and Craneo-facial growth and its relation with children's development	4.09	1.30
4. Implement Preventive and Interceptive Orthodontic	3.55	1.51
5. Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics	3.55	1.56

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Table 41 shows the overall clinical skills level of achievement, according to industry professionals.

Table 41

Overall Clinical Skills Level of Achievement According to Industry Professionals

Item	Clinical skills	Clinical Skills Level Mean	*SD*
1	Restorative dentistry	4.73	.90
2	Endodontics	3.00	1.26
3	Oral Surgery	3.82	1.32
4	Orthodontics	2.50	1.91
5	Periodontics	3.91	1.27
6	Prosthodontics	3.27	.500

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

The next Table (See Table 42) shows the student's acquisition of competencies according to the industry professionals.

Table 42

Student's Acquisition of Competencies According to the Industry Professionals

Item	Competency	Competency Level Mean	*SD*
1	Think in a critical way	4.09	1.22
2	Solve Problems and seek solutions	4.09	1.30
3	Learn subjects on its own	3.55	1.50
4	Promote patient's health care	4.27	1.42
5	Communicate with patients	4.45	1.03
6	Demonstrate that she /he is a professional	4.64	.92
7	Manage the office businesses, finances, and human resources	4.64	1.56
8	Take care of his/her patient	4.55	.93
9	Establish patient's oral health	4.18	1.40

Table 42 – Continued

Item	Competency	Competency Level Mean	*SD*
10	Maintain patient's oral health	4.18	1.25
11	Implement principles of evidence-based dentistry	4.18	1.40
12	Plan and make decisions	4.18	1.20

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Finally, industry professionals were asked to rate their confidence level regarding the dentists' preparation they hire or supervise. In this case, they had to rate this preparation, considering the university where they studied dentistry. Before conducting this study, I agreed with the school's directors to protect the university identity when reporting the data. Thus, each university is represented with a number (See Table 43 with these data). Although only nine universities participated in this study, industry professionals rated all their employees, including dentists graduated of 12 universities currently teaching dentistry within the DR. Illustrating this study and protecting all universities' confidentiality, results are shown, keeping the university names labeled with a number. See Table 43 with a dentist's preparedness per university attended, according to the industry professionals' point of view.

Table 43

Relation of Dentists Preparedness Per University Attended, According to Industry Professionals

Item	Universities	Competency Level Mean	*SD*
1	University No.1	4.73	0.90
2	University No.2	4.55	.93
3	University No.3	3.00	1.41
4	University No.4	3.00	1.41
5	University No.5	3.00	1.41

Table 43 – Continued

Item	Universities	Competency Level	
		Mean	*SD*
6	University No.6	4.36	1.02
7	University No.7	3.36	1.43
8	University No.8	3.73	1.42
9	University No.9	3.27	1.55
10	University No.10	3.00	1.48
11	University No. 11	4.64	.92
12	University No.12	4.86	.91

Note: Likert Scale = 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident

Finally, I placed a table comparing the preparedness level to practice Dentistry according to the students, practicing dentists, faculty, and industry professionals' result in Table 44 with these data.

Table 44

Comparison of the Level of Preparedness to Practice Dentistry According to Students, Practicing Dentists, Faculty and Industry Professionals

Participants	Overall Level of Competency and Clinical Skills Achievement	
	Competency Level	
	Mean	*SD*
Students	5.42	1.01
Practicing Dentists	5.67	.577
Faculty	4.25	2.36
Industry Professionals	4.51	1.45
Overall	4.96	1.07

Note: Likert Scale. Indicate if your level of agreement with:My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Research Question 2: What are the similarities and differences between the four stakeholder groups' perceptions regarding students' current acquisition of competencies and clinical skills to treat patients, and other pre-clinical and clinical dental program components?

The second research question asked about the similarities and differences between the four stakeholder groups and their perceptions regarding students' current acquisition of competencies and clinical skills to treat patients and other pre-clinical and clinical dental program components. Before exploring this question, I initially ran a Univariate ANOVA or General Linear Mode. The Univariate ANOVA allowed me to inspect the similarities and differences between the four stakeholder groups and their perceptions regarding students' current acquisition of competencies and clinical skills to treat patients and other pre-clinical and clinical dental program components. So, I checked differences and similarities between the four stakeholder groups of participants, and then, only as a way to understand these differences or similarities, each group of participants was compared among each of the same population of participants (Within subjects and Between Subjects). However, results only show between-subjects analysis because this question only asked regarding similarities and differences between groups.I also compared the dental program components' effect on the student's acquisition of competencies and clinical skills and explored the similarities and differences. I also examined the university's impact on their acquisition of competencies and clinical expertise to treat patients. In the students' case, I considered the university where they studied—the university where they attended the practicing dentists. In the faculties, the university where they taught, and the industry professionals' fact, their hired or supervised dentists. However, the program components were not asked the industry professionals because they lacked knowledge of the different dentistry schools' dental curriculum. Instead, they were inspected regarding the dentist's preparedness, depending on the university they had

graduated from. To guarantee that the same questions were used for all four groups, several items were removed. The new score was calculated by summing each response and creating a competency score for each. So, the index was standardized once the irrelevant questions had been eliminated. The global average value per sector was placed for the value obtained in the different evaluated sections, weighted from the value ("1 = Not at all confident" to the value "6 =100% confident"), in the case of the competencies and clinical skills section, and ("1=Strongly disagree," to the amount "6 =100% Strongly agree, in the case of the program components). The variance analysis was carried out and validated for the four stakeholder groups, students, practicing dentists, faculties, and industry professionals.

Regarding the ANOVA, it was observed that the population of industry professionals was small (42 participants), and this type of analysis could lose statistical power with such a person. Despite this fact, the ANOVA was conducted with industry professionals. After finishing the ANOVA, there were observed statistically significant differences in 30 items asked in the survey ($p < 0.05$). However, a post hoc analysis demonstrated that only one item was statistically significant. So, I decided to run a Kruskal Wallis non-parametric Test to explore the mean differences. Regarding presenting the results of all participants, although all values are showed indicating within and between subjects results. All my conclusions and analysis are based on the similarities and differences between participants. After conducting the univariate ANOVA (Within Subjects and Between Subjects) for all participants and the Kruskal –Wallis non-parametric Test for the industry professional participants survey. Results are presented by contestants as follows in the following paragraphs.

Students results. For the student's results, the overall student's responses indicated that they achieve competencies and clinical skills, and the program components helped them with this. Overall, there were not found significant differences among and within the students ($p > 0.05$).

Regarding the percentage of similarity of acquisition of competencies and clinical skills in Dentistry, 84% (65 items) were perceived as achieved by the students in the different areas evaluated. So, these values were found statistically non-significant ($p > 0.05$) (see Table 66). However, after conducting the ANOVA along with Welch's t-test to verify the hypothesis that two populations had equal means, differences in attainment of competencies and clinical skills were found, 12 items (16 %) with a statistical difference ($p < 0.05$) in the perception of the current acquisition of competencies and clinical skills. Concerning the percentage of similarities of program components that help students acquire competencies and clinical skills in Dentistry, 50 items (75%) were perceived achieved by the students according to themselves. So, these items were found with a non-statistical difference ($p > 0.05$). However, differences were found in 17 items (25 %) with a statistical difference ($p < 0.05$). Differences in acquiring competencies and clinical skills were observed regarding the university attended.

For the student's competencies, after conducting the ANOVA, I found some elements that are part of the competencies and the clinical skills where students showed statistically significant differences in at least one of the items that are part of the competencies or the clinical skills. Tables 45 and 46 presents a summary of the data regarding the competencies and clinical skills less achieved where are observed these differences. Finally, after running the Univariate ANOVA for the student's sector and through comparative analysis, I found differences between the different universities involved in this study. After conducting this analysis, using the Tukey Test, 12 items' showed a definitive relationship with the university attended. These differences can be highlighted for each of the 12 items with a statistically significant difference ($p < 0.05$). detected

Table 45

Competencies Where Students Showed Differences Regarding their Level of Achievement

Item	Competency	ANOVA Mean Between	ANOVA Mean Within	*Sig*
4	Critical Thinking and Problem Solving.	3.49	1.61	.034
5	Critical Thinking and Problem Solving.	3.72	1.55	.018
2	Self-Directed Learning and Health Care Promotion	3.34	1.49	.028
1	Professionalism	3.48	1.57	.030
2	Professionalism	3.06	1.31	.022
5	Professionalism	3.10	1.25	.015

Note: Likert Scale: Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

Differences in the acquisition of competences within and bewteen subjects. These values were found with significant difference $p < .05$

Table 46 presents the elements of competencies (or sub-division of competencies) reported with differences. The sub-division of competencies were: Distinguish the difficulties in a problem, detect strengths and weaknesses of situations, implement strategies to health promotion and prevention of oral diseases by educating individuals and communities, apply ethical and legal standards in the provision of dental care, consult with or refer to professional colleagues when indicated, and display professional behavior. See these data in table 46.

Table 46

Competencies Where Students Showed Responses Statistically Significant Differences

Item	Element	Competency	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
4	Distinguish the difficulties in a problem	Critical Thinking and Problem Solving.	Between	27.94	8	3.493	2.159	.034
			Within	232.971	144	1.618		
			Total	260.915	152			
5	Detect strengths and weaknesses of situations.	Critical Thinking and Problem Solving.	Between	29.821	8	3.728	2.400	.018
			Within	223.682	144	1.553		
			Total	253.503	152			
2	Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.	Self-Directed Learning and Health Care Promotion	Between		8	3.345	2.235	.028
			Within		144	1.496		
			Total		152			
1	Apply ethical and legal standards in the provision of dental care	Professionalism	Between		8	3.486	2.211	.030
			Within		144	1.576		
			Total		152			
2	Consult with or refer to professional colleagues when indicated	Professionalism	Between		8	3.060	2.323	.022
			Within		144	1.371		
			Total		152			
5	Display professional behavior	Professionalism	Between		8	3.106	2.469	.015
			Within		144	1.258		
			Total		152			

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

Regarding the survey section about the demonstration of clinical skills in several dentistry areas, students were asked to indicate their confidence level to perform the areas asked. There were found four groups of areas where they showed statistically significant differences ($p < 0.05$). Regarding these clinical skills, although they were asked grouped in the surveys, it was possible to identify the clinical skill elements where students' responses showed differences. See Table 47, where I present student's differences in clinical skills achievement.

Table 47

Student's Differences' in the Preparedness in Specific Elements that Compound Clinical Areas

Item	Element	Clinical Areas	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	Sig
4	Manage restorative procedures that preserve tooth structure, maintain function and are esthetic	Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.	Between	26.865	8			
			Within	174.129	144	3.358	2.777	.007
			Total	200.993	152	1.209		
1	Prevent and control dental caries	Cariology, Orthodontics	Between	19.399	8	2.425	2.102	.039
			Within	166.143	144	1.154		
			Total	185.542	152			
		Restorative dentistry	Between	27.888	8	3.486	2.293	.024
			Within	218.949	144	1.520		
			Total	246.837	152			

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident. Differences in the acquisition of competences within and bewteen subjects. These values were found with significant difference $p < .05$

Regarding the dental curriculum components (teaching strategies, preclinical/ clinical hours, community service, evidence-based dentistry), I also checked which of them helped or affected the student's acquisition of competencies. After conducting the Univariate ANOVA and verified by the Welch's Test, for the student's sector, it was evident that there were 12 items (20%) with a statistically significant difference ($p < 0.05$) that the student's perceived were affecting their acquisition of competencies and clinical skills. However, regarding the percentage similarity of acquisition of competencies and clinical skills related to the program components,75% (50 items) were perceived as achieved by the students in the different areas evaluated ($p < 0.05$). Overall, the program components help students in the acquisition of required competencies. Table 48 presents the preclinical courses where students show less level of agreement regarding their implementation.

Table 48

Students Differences in Implementation of Pre-Clinical Courses

Item	Element	Preclinical Courses	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
2	Restorative Dentistry	Restorative Dentistry	Between	36.034	8	4.504	2.842	.006
			Within	228.201	144	1.585		
			Total	264.235	152			
4	Endodontics	Endodontics	Between	26.563	8	3.320	2.210	.030
			Within	216.313	144	1.502		
			Total	242.876	152			

Note: Likert Scale. Indicate level of agreement.Implementation of preclinical courses. 1 Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Table 49 presents the data from the ANOVA analysis of students between and within students regarding the hours dedicated to teaching in preclinical courses. There was a significant difference within and between the groups (F = 2.842, $p < .006$), and (F = 2.210, $p < .030$).

Table 49

Students' Differences in the Hours Dedicated to Pre-Clinical Courses

Item	Element	Preclinical Courses	ANOVA Perceptions of Attainment	Sum of squares	*Df*	Mean Square	*F*	*Sig*
6	Dental Anesthesia	Dental Anesthesia	Between	32.872	8	4.109	3.029	.004
			Within	195.338	144			
			Total	228.209	152	1.357		
4	Endodontics	Endodontics	Between	34.362	8	4.295	3.105	.003
			Within	199.168	144	1.383		
			Total	233.529	152			

Note: Likert Scale. Indicate level of agreement. Hours dedicated in preclinical courses. 1 Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Differences. These values were found with significant difference $p < .05$

Table 50 presents the data from the ANOVA analysis of between and within students regarding the preparedness due to specific preclinical courses. There was a significant difference within and between the groups (F = 3.029, $p < .004$), and (F = 3.105, $p < .003$).

Table 50

Students' Differences in the Preparedness in Preclinical Courses

Item	Element	Preclinical Course	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
4	Endodontics	Endodontics	Between	29.964	8	3.746	2.245	.027
			Within	240.245	144	1.668		
			Total	270.209	152			
6	Periodontics	Periodontics	Between	32.872	8	4.109	3.029	.004
			Within	195.338	144			
			Total	228.209	152	1.357		
3	Oral Surgery	Oral Surgery	Between	34.362	8	4.295	3.105	003
			Within	199.168	144	1.383		
			Total	233.529	152			

Note: Likert Scale (Student's survey) The clinical practices in these areas prepared effectively to treat patients 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Differences in Preparednees Preclinical Courses. These values were found with significant difference $p < .05$

Table 51 show the differences in responses to the Implementation of Preclinical Courses. These preclinical courses were Restorative Dentistry and Endodontics.

Table 51

Student's Differences in Responses to the Implementation of Preclinical Courses

Item	Element	Preclinical Courses Implemented	ANOVA	Sum of squares	*df*	Mean Square	*F*	*Sig*
2	Restorative Dentistry	Restorative Dentistry	Between	36.034	8	4.504	2.842	.006
			Within	228.201	144	1.585		
			Total	264.235	152			
4	Endodontics	Endodontics	Between	26.563	8	3.320	2.210	.030
			Within	216.313	144	1.502		
			Total	242.876	152			

Note: Likert Scale (Student's survey) My dental curriculum implements preclinical courses for these dental areass 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Students' also responded regarding the teaching strategies implemented by their professors. These areas were: a) cases to solve problems, b) lectures, c) making or recording/ or creating videos, d) had to do reflective journals, e) brainstorming, f) video tutorials of any material taught, g) use of technology such as WhatsApp chat, Facebook, Google docs., h) online classes, i) cooperative learning, j) preclinical sessions, k) perform clinical rotations to help students who are working in the clinical areas, l) attend to conventions and extracurricular courses outside or inside the university, and, m) doing posters. Overall, students showed differences in four of the teaching strategies explored. See Table 52 with these data.

Table 52

Student's Differences' in Responses of the Teaching Strategies Implemented by the Professors

Item	Dental Program Component Regarding Teaching Strategies	Mean Between	ANOVA Mean Within	*Sig*
3	My Professors have taught me how to effectively think in a critical way	2.80	1.24	.026
10	The strategies my professors used to teach me included Preclinical Sessions	2.77	.99	.007
12	Attend to conventions and extracurricular courses outside or inside the university	2.11	.915	.023
13	Doing posters	4.09	1.84	.029

Note: Likert Scale (Student's survey) The strategies professors used to teach:1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Differences. These values were found with significant difference $p < .05$

Table 53 presents data from the ANOVA analysis of between and within students regarding their preparedness due to clinical practices. There was a significant difference within and between the groups ($F = 2.806$, $p < .006$), and ($F = 2.742$, $p < .008$). However, I took into account for the analysis only the means between participants. Within subjects, means are only presented as an illustration. These values are low. See these data in table 53.

Table 53

Student's Differences in Preparedness Due to Clinical Practices

Item	Dental Program Component Clinical Practices	Mean Between	Mean Within	*Sig*
1	Overall the clinical practices prepared effectively to treat patients	3.02	1.00	.004
1	The clinical practices in Diagnostic prepared effectively to treat patients	3.02	1.04	.004
2	The clinical practices in Restorative Dentistry prepared effectively to treat patients	2.60	.97	.009
3	The clinical practices in Pediatric Dentistry prepared effectively to treat patients	2.15	.98	.03
7	The clinical practices in Oral Surgery prepared effectively to treat patients	2.23	1.00	.03

[*Note:* Likert Scale (Student's survey) My clinical practices preparedme effectively to practice. 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree].

Table 54 presents data from the ANOVA analysis of between and within students regarding acquiring specific clinical skills. There was a significant difference within and between the groups (F = 2.806, $p < .006$), and (F = 2.742, $p < .008$).

Table 54

Student's Differences in the Acquisition of Specific Clinical Skills

Item	Element	Competency	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
5	Preventive Dentistry	Preventive Dentistry	Between	35.366	8	4.421	2.806	.006
			Within	226.843	144	1.575		
			Total	262.209	152			
7	Periodontics	Periodontics	Between	29.787	8	3.723	2.742.	.008
			Within	195.520	144	1.358		
			Total	225.307	152			

Note: Likert Scale (Student's survey) My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Table 55 presents the data from the ANOVA analysis between and within students regarding the teaching strategies. There was a significant difference within and between the groups (F = 2.792, $p < .007$), (F = 2.308, $p < .023$), (F = 2.222, $p < .029$).

Table 55

Student's Differences Regarding Teaching Strategies

Item	Element	Teaching Strategy	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
10	Preclinical Courses	Implementation of Preclinical Courses	Between	22.165	8	2.771	2.792	.007
			Within	142.883	144	.992		
			Total	165.059	152			
12	Extracurricular activities	Attend to conventions and extracurricular courses outside or inside the university	Between	16.900	8	2.112	2.308	.023
			Within	131.819	144	.915		
			Total	148.719	152			
13	Posters	Doing posters	Between	32.718	8	4.090	2.222	.029
			Within	265.047	144	1.841		
			Total	297.765	152			

Note: Likert Scale (Student's survey) My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree]. Differences in Preparedness Clinical practices. These values were found with significant difference $p < .05$

Table 56 presents the data from the ANOVA analysis between and within students regarding preventive dentistry. There was a significant difference within and between the groups (F = 2.806, $p < .006$), and (F = 2.74, $p < .008$) in the case of Periodontics.

Table 56

Student's Differences in the Preparedness in Clinical Practices

Item	Element	Clinical Practices	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
5	Preventive Dentistry	Preventive Dentistry	Between	35.366	8	4.421	2.806	.006
			Within	226.843	144	1.575		
			Total	262.209	152			
7	Periodontics	Periodontics	Between	29.787	8	3.723	2.742.	.008
			Within	195.520	144	1.358		
			Total	225.307	152			

Note: Likert Scale (Student's survey) My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree].

Differences in Preparedness Clinical practices. These values were found with significant difference $p < .05$

Besides, the minimum and maximum response values were determined, with 95% reliability. These values were determined based on the different universities that the students were attending. Thus, the university caused students regarding their acquisition of competencies and clinical skills to treat patients was checked. In the case of students, I took into account the university where they were studying.

After running the Univariate ANOVA for the student's sector, it was evident that through comparative analysis, the differences between the different universities involved in this study can be highlighted for each of the 12 items with statistically significant differences ($p < 0.05$). After conducting this analysis, using the Tukey statistic was evidenced by the relation of these 12 items' less achieved and the university where the students were attending. This evidence is quantified

using a graph of means, where the significant differences were inspected. Due to confidentiality and as agreed with dental school's directors, this information regarding the overall university performance will only be delivered independently to each university. However, I only placed the university's overall level of achievement using a table without including its names regarding this study. The universities are not named to protect their identity. The following table (No.57) shows the difference in the mean averages of the competency and clinical skills achievement depending on the university attended. It can be observed the differences.

Table 57

Mean Averages of the Competency and Clinical Skills Achievement Depending on the University Attended According to Students

Competencies	Universities (n)								
Rate your level of confidence for being able to do the following.	1(13)	2(20)	3(20)	4(27)	5(22)	6(33)	7(6)	8(10)	9(2)
Critical Thinking and Problem Solving									
Mean	3.62	3.8	3.9	4.07	4.09	4.42	4.83	4.9	5.5
Self-Directed Learning and Health Care Promotion									
Mean	4.1	4.31	4.37	4.68	4.75	4.83	4.85	5	5.1
Communication and interpersonal skills									
Mean	4.46	474	5	5	5.15	5.2	5.24	5.36	6
Practice Management and Informatics									
Mean	4.46	4.74	5	5	5.15	5.2	5.24	5.36	6
Patient Care									
Mean	4.62	4.67	5.19	5.2	5.27	5.32	5.45	5.6	6
Evidence-Based Dentistry (EBD)									
Mean	4.33	4.48	4.5	4.5	4.69	4.7	4.86	4.9	5.5

Table 57 – Continued

Competencies	Universities (n)								
Rate your level of confidence for being able to do the following.	1(13)	2(20)	3(20)	4(27)	5(22)	6(33)	7(6)	8(10)	9(2)
Establishment and maintenance of oral health.									
Mean	4.08	4.68	4.74	4.83	5.05	5.09	5.2	5.2	6
Professionalism									
Mean	4.38	4.67	4.96	5.18	5.25	5.59	5.7	5.75	6
Rate your level of confidence for the following: I can practice Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics									
Mean	4.38	4.67	4.85	4.88	5.1	5.1	5.18	5.45	6
Oral Surgery, Prosthodontics, Dental Public Health.									
Mean	4	4.08	4.27	4.32	4.4	4.41	4.7	4.8	5.5
Cariology, Orthodontics									
Mean	3.83	4.04	4.18	4.3	4.38	4.45	4.6	4.8	5

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

Differences in the acquisition of competences within and bewteen subjects. These values were found with significant difference $p < .05$

Finally, Table 58 presents the data from the ANOVA analysis between and within student's ANOVA (within and between subjects) of the overall level of competency, clinical skills, and the effect the program components made in the student's competencies and clinical skills attainment. Overall, there was no significant difference between the groups ($F = 13.631$, $p > .05$). Although some differences were detected, the global mean was (M=4.93), which indicated

an overall acquisition of competencies, and clinical skills, based on the program components, according to the student's perceptions.

Table 58

Overall Similarities of Student's Preparedness

	Level of Achievement of Competencies					
	ANOVA Perceptions of Attainment	Sum of squares	Df	Mean Square	F	*Sig*
Between Subjects	Between Elements	12401.305	152	81.588	374.434	.000
	Residual	59491.59	14	413.136		
Within Subjects	Within Elements	24150.381	21888	1.103		
	Total	83641.972	22032	3.796		
Total		96043.277	22184	4.329		

Note: Likert Scale. Indicate if your level of agreement with:My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Practicing Dentists results. The practicing dentists' overall practicing dentist's responses indicated that they achieved competencies and clinical skills, and the program components helped them with this. Overall, there were no significant differences found among and within the practicing dentists ($p > 0.05$). Regarding the percentage of similarity between the acquisition of competencies and clinical skills in Dentistry, 91% (75 items) were perceived as achieved by the practicing dentists in the different areas evaluated. So, these values were found statistically non-significant ($p > 0.05$) (see Table 57). However, after conducting the ANOVA along with Welch's t-test in order to verify the hypothesis that two populations had equal means, differences in attainment of competencies and clinical skills were found. I detected seven items (9 %) with a

statistical difference ($p < 0.05$) in the perception of the current acquisition of competencies and clinical skills. Concerning the percentage of similarities of program components that helped practicing dentists in their acquisition of competencies and clinical skills in Dentistry, 60 items (78%) were perceived achieved by the practicing dentists according to themselves. So, these items were found with a non-statistical difference ($p > 0.05$). However, differences were found in 17 items (22 %) with a statistical difference ($p < 0.05$). Differences in acquiring competencies and clinical skills were observed regarding the university attended. A more detailed description of the results can be found following this paragraph.

For the practicing dentist's competencies less achieved, after conducting the ANOVA and verified by the Welch Test, seven items (9%) were found with statistical differences ($p< .05$). However, after conducting the Post Hoc Test to explore differences between multiple groups means, and after multiple comparisons, I did not found significant differences due to the high degree of similarity in the pattern of responses for practicing dentists ($p>.05$). Regarding the universities where these practicing dentists studied and the differences found, after conducting the Univariate ANOVA for the practicing dentist's survey, it was evident that through comparative analysis, the differences between the different universities involved were highlighted for each of the seven items with no statistically significant differences. This evidence is quantified using a graph of means, where significant differences between the different universities were detected. Due to confidentiality and as agreed with dental school's directors, this information regarding the overall university performance will only be delivered independently to each university. In addition, the Tukey Index could not be done for the seven items because there were no statistically differences or variations between these categories. Although they did not represent a 95% variable to assess within the practicing dentist's participants, the seven items graphics were inspected. Also, the F-test statistic's asymptotic distribution for fixed effect in some of the

elements did not show statistical differences because at least one group had the sum of case weights less than or equal to one. Thus, according to practicing dentists, they had acquired the competencies and the clinical skills, and the program components had helped them with this acquisition ($p > .05$). However, I detected differences depending the university attended.

The following table (No.59) shows the difference in the mean averages of the competency and clinical skills achievement depending on the university attended. It can be observed the differences.

Table 59

Mean Averages of the Competency and Clinical Skills Achievement Depending on the University Attended According to Practicing Dentists

Competencies	Universities (*n*)								
Rate your level of confidence for being able to do the following.	1(11)	2(2)	3(9)	4(4)	5(55)	6(1)	7(1)	8(4)	9(4)
Critical Thinking and Problem Solving									
Mean	4.82	5.50	4.67	4.25	5.09	5.00	6.00	4.75	4.00
Self-Directed Learning and Health Care Promotion									
Mean	4.56	5.09	5.50	4.78	4.75	4.91	6.00	3.00	4.75
Communication and interpersonal skills									
Mean	4.89	5.45	6.00	4.78	4.75	5.29	6.00	5.00	5.50
Practice Management and Informatics									
Mean	4.22	4.55	5.00	3.56	4.25	4.45	6.00	4.00	4.00
Patient Care									
Mean	5.44	5.73	6.00	5.00	5.75	5.58	6.00	5.00	6.00
Evidence-Based Dentistry (EBD)									
Mean	5.11	4.82	5.50	4.44	4.25	5.31	5.00	6.00	5.75
Establishment and maintenance of oral health.									

Table 59 – Continued

Competencies	Universities (*n*)								
Rate your level of confidence for being able to do the following.	1(11)	2(2)	3(9)	4(4)	5(55)	6(1)	7(1)	8(4)	9(4)
Mean	5.33	5.36	5.50	5.33	5.75	5.35	6.00	3.00	6.00
Professionalism									
Mean	5.67	5.73	5.50	5.11	5.25	5.38	6.00	5.00	5.75
Rate your level of confidence for the following: I can practice	Universities (*n*)								
Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics	1(9)	2(11)	3(2)	4(9)	5(4)	6(55)	7(1)	8(1)	9(4)
Mean	5.33	5.09	4.50	4.78	5.50	4.84	6.00	5.00	5.25
Oral Surgery, Prosthodontics, Dental Public Health.									
Mean	4.89	5.64	5.00	4.78	4.75	5.04	6.00	5.00	5.75
Cariology, Orthodontics									
Mean	4.89	4.73	3.50	4.00	4.00	4.80	4.00	5.00	4.75

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

Faculty results. For the faculty results, overall faculty's responses indicated that their students achieve competency and clinical skills, and the program components help them with this.

Overall, there were no significant differences found among and within faculty ($p > 0.05$). Furthermore, the percentage of similarities in the acquisition of competencies and clinical skills in dentistry was 63% (51 items), which were perceived as achieved by the faculty in the different areas evaluated.

These 51 items were found statistically non-significant ($p > 0.05$) (See Table No.60). However, after conducting the ANOVA and Welch's Test to verify the hypothesis that two populations had equal means, differences in attainment of competencies and clinical skills were found. Thus, it was observed that 30 items (37%) had a statistical difference ($p < 0.05$) in the faculty perception of the current acquisition of competencies and clinical skills by their students. The percentage of similarities of program components that help the students acquire the requisite competencies and clinical skills were checked. Also, 33 items (54%) were found with a statistical difference ($p < 0.05$) within the faculty and between the faculty. Also, differences in competencies and clinical skills achieved were observed regarding the different universities faculty teach dentistry. A more detailed description of the results of this question is in Table 60.

Table 60

Similarity of Competencies Acquired by the Students According to Faculty

Item	Elements Achieved	Competency
1	Estimate and integrate emergent trends in health care.	Critical Thinking and Problem Solving.
3	Solve problems in different circumstances	
4	Distinguish the difficulties in a problem	
5	Detect strengths and weaknesses of situations.	
2	Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities	Self-Directed Learning and Health Care Promotion
5	Respect the beliefs and preferences of all patients.	
1	Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.	Communication and interpersonal skills
2	Apply psychosocial and social principles in patient- centered health care	
5	Make decisions even when conditions are uncertain.	
1	Evaluate and apply contemporary and emerging information	Practice Management and Informatics
3	Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.	
4	Demonstrate effective business, financial management, and human resource skills	
5	Understand quality assurance and assessment concepts	
	All Items achieved	Patient Care
1	Address the needs of the patient as a complete human being.	
2	Facilitate consultation and referrals with all relevant health care providers	
3	Manage medical emergencies by using professional judgment	
4	Provide basic life support and utilize CPR knowledge when needed.	

Table 60 – Continued

Item	Elements Achieved	Competency
5	Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects	Patient Care
4	Implement strategies for specific patient care scenarios	Evidence-Based Dentistry (EBD
5	Implement a systematic strategy for finding evidence	
1	Provide prevention, intervention, and educational strategies	Establishment and maintenance of oral health.
3	Recognize and appreciate the need to contribute to the improvement of patients oral health	
4	Capacity to evaluate treatment and its outcomes	
1	Apply ethical and legal standards in the provision of dental care	Professionalism
3	Demonstrate business, financial management, and human resource skills	
5	Display professional behavior	
6	Consider a patient's well being	
7	Possess patient's examination skills	
8	Control patient's pain and anxiety	
8	Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care	

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident. These values were found non-significant ($p > 0.05$).

The next Table (61) shows the overall similarity of competencies achieved by the students according to faculty.

Table 61

Overall Similarity of Competencies Achieved by the Students According to Faculty

	Similarity of Competencies Achieved
1	Think in a critical way
2	Seek solutions for problems
3	Learn subjects on my own
4	Promote patient's health care
5	Communicate with patients
6	Demonstrate that I am a professional
7	Manage my office businesses, finances, and human resources
8	Take care of my patient
10	Maintain patient's oral health
11	Implement principles of evidence-based dentistry
12	Plan and make decisions

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident. Overall Similarity of Competencies Achieved by the Students According to Faculty. These values were found non-significant ($p > 0.05$).

The next Table (62) shows the faculty's similarity in responses of acquisition of clinical skills asked grouped. The clinical skills are Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics, Oral Surgery, Prosthodontics, Dental Public Health, Cariology, and Orthodontics. See Table 62 with these data in the following page.

Table 62

Faculty's Similarity in Responses of Acquisition of Clinical Skills Asked Grouped

Item	Elements	Clinical Skills
4	Manage restorative procedures that preserve tooth structure, maintain function and are esthetic	Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics
2	Replace missing or defective tooth structure, maintaining function and esthetics	Oral Surgery, Prosthodontics, Dental Public Health
3	Evaluate outcomes of comprehensive dental care	
4	Diagnose and manage developmental occlusal abnormalities	
5	Prevent, diagnose and manage temporomandibular disorders	
6	Manage the replacement of teeth for the partially or complete edentulous patient	
7	Communicate and collaborate with groups and individuals with oral health issues	
1	Prevent and control dental caries	Cariology, Orthodontics
2	Develop strategies of assessment and management of dental caries	
3	Understand Anatomy and Craneo-facial growth and its relation with children's development	
4	Implement Preventive and Interceptive Orthodontic	
5	Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics	

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident. These values were found non-significant ($p > 0.05$).

The following Table shows the overall faculty's similarity of implementation of several preclinical courses. All the courses were reported with similarities by the faculty. See Table 63 with these data.

Table 63

Overall Faculty's Similarity of Implementation of Preclinical Courses

	Preclinical Courses Implemented in Several Areas
1	Dental Anatomy
2	Operative dentistry
3	Dental Anesthesia
4	Endodontics
5	Prosthodontics
6	Periodontics
7	Oral Surgery
8	Biomaterials

Note: Likert Scale. Indicate if your level of agreement with:My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

The next Table shows the overall faculty's similarity of hours dedicated in preclinical courses (see table 64 with these data).

Table 64

Overall Faculty's Similarity of Hours Dedicated in Preclinical Courses

	Hours In Preclinical Courses in Several Areas
1	Dental Anatomy
5	Prosthodontics
6	Periodontics
7	Oral Surgery
8	Biomaterials

Note: Likert Scale. Indicate if your level of agreement with:y dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree2=disagree 3=Slightly disagree 4=Slightly agree5=agree 6=Strongly agree.

The next Table shows the overall faculty's similarity in responses of student's preparedness due to pre-clinical courses. See Table 65 with these data.

Table 65

Overall Faculty's Similarities in Responses of Students Preparedness Due to Pre-Clinical Courses

	Faculty's Preparedness Due to Pre-clinical Courses
3	Implementing best patient's treatments considering benefits and harms of alternative care options

Note: Likert Scale. Indicate if your level of agreement with: The dental curriculum where I teach dedicates time to prepare students **.**1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightlyagree.5=agree 6=Strongly agree. *Similarities.*

The next Table shows the overall faculty's similarity in responses of student's preparedness due to community service (See Table 66 with these data).

Table 66

Overall Faculty's Similarity of Preparedness Due to Community Service

	Preparedness Due to Community Service
2	To appreciate the influence of social, cultural, and economic forces on oral health care
3	Health Promotion
4	To understand and cooperate to Local and Global Public Health
5	Experiences in Community Health as part of my dental curriculum
6	Extracurricular experiences in community health during my life as student

Note: Likert Scale. Indicate if your level of agreement with: My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightlyagree 5=agree 6=Strongly agree.

The next Table shows the most common teaching strategies used to teach by faculty. See table 67 with these data.

Table 67

Overall Faculty's Similarity of the Most Frequent Teaching Strategies Used to Teach

	Teaching Strategies Used
1	Cases to Solve problems
2	Lectures
3	Making or recording/ or creating videos
5	Brain storming
6	Video tutorials of any material taught
7	Use of technology such as WhatsApp chat, face book, google docs, etc.
8	Online classes
9	Cooperative learning
10	Preclinical sessions
11	Perform clinical rotations to help students who are working in the clinical areas
12	Attend to conventions and extracurricular courses outside or inside the university

Note: Likert Scale. Indicate if your level of agreement with: The strategies that I use to teach include .1=Strongly disagree2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Overall, faculty 'answered that they implement diverse teaching strategies (11 teaching strategies). These values were found non-significant ($p > 0.05$). However, two teaching strategies were identified as not frequently used by Faculty and showed significant differences ($p < 0.05$). According to Faculty, they did not teach their students how to do posters (item No. 13), and they did not frequently assign to their students to do reflective journals (item No. 14).

Despite these findings, according to Faculty, overall, they considered that the teaching strategies that they use to teach are motivating and enriching. These values were found non-statistically significant ($p > 0.05$). The clinical areas were also explored to detect the clinical areas more achieved by the students, according to the Faculty. Table No. 68 shows the overall Faculty's similarity of students' preparedness in clinical areas demonstrating the clinical areas

more achieved by students, according to Faculty. According to Faculty, their students are prepared to practice dentistry ($p > 0.05$). However, three clinical areas showed significant differences ($p < 0.05$), Diagnostic, Cariology, and Public Health.

Table 68

Overall Faculty's Similarity of Responses in Student's Preparedness in Clinical Areas

	Similarity Responses in Preparedness
2	Operative dentistry
3	Pediatric Dentistry
4	Endodontics
5	Prosthodontics
6	Periodontics
7	Oral Surgery

Note: Likert Scale. Indicate if your level of agreement with:The clinical practices in these areas prepare effectively students to treat patients.1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

For the student's competencies less achieved as perceived by the faculty, although overall faculty perceived that their students acquire competencies and clinical skills, however, after conducting the ANOVA and Welch's T-test to verify the hypothesis that two populations had equal means, differences in attainment of competencies and clinical skills were found. Thus, it was observed that 30 items (37%) had a statistical difference ($p < 0.05$) in the faculty perception of the current acquisition of competencies and clinical skills by their students. After inspecting the competencies, also the results revealed significant differences in several elements that are part of the competencies. These differences are described in the following paragraphs. The faculty had to rate their confidence level so their students could do all the competencies and clinical skills explored in this study. Regarding the program components, they had to rate their agreement regarding the elements that compound the program.

Regarding the achievement of Critical Thinking and Problem-Solving, they had to rate their confidence level to use critical thinking skills (item No. 2) and solve problems in different circumstances (item No.3). There were detected significant differences within faculty and between faculty ($p < 0.05$). (See Table 79). Also, there were significant differences between faculty and faculty in some elements of the competency Self-Directed Learning and Health Care Promotion *(*$p < 0.05$; See Table 81). Also, differences were observed in some competency communication and interpersonal skills, practice Management and Informatics, and Evidence-Based Dentistry (EBD). Also, differences were detected in some elements of the competency Establishment and maintenance of oral health and some professional competency elements. Table 69 shows a summary of the data regarding the differences found in some necessary competencies.

Table 69

Elements of Competencies Less Achieved by the Students According to Faculty

Item	Competency	ANOVA Mean Between	ANOVA Mean Within	*Sig*
2	Critical Thinking and Problem Solving.	3.129	1.849	.088
3	Critical Thinking and Problem Solving.	3.113	1.434	.023
1	Self-Directed Learning and Health Care Promotion	4.020	1.875	.025
3	Self-Directed Learning and Health Care Promotion	3.789	1.492	.008
4	Self-Directed Learning and Health Care Promotion	2.411	1.657	.097
3	Communication and Interpersonal Skills	2.988	1,464	.033
2	Practice Management and Informatics	2.573	1.553	.097
3	Practice Management and Informatics	2.693	1.434	.053
2	Evidence-Based Dentistry (EBD)	3.386	1.624	.030
2	Establishment and Maintenance of Oral Health	2.856	1.560	.061
3	Establishment and Maintenance of Oral Health	2.970	1.307	.017
5	Establishment and Maintenance of Oral Health	5.743	1.719	.001

Table 69 – Continued

Item	Competency	ANOVA Mean Between	ANOVA Mean Within	*Sig*
6	Establishment and Maintenance of Oral Health	3.961	1.581	.009
7	Establishment and Maintenance of Oral Health	2.668	1.522	.075
2	Professionalism	2.532	1.359	.055
4	Professionalism	2.142	1.292	.097

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

After concluding these analyses, it can be said that according to faculty perceptions, students show difficulties in acquiring these specific constructs that are part of competency and mentioned above. After exploring the Tukey test, it was determined that these 12 items' had definitive relation with the university faculty was teaching. See Table 70, with the elements of competencies less achieved by the students, according to faculty.

Table 70

Elements of the Competencies Not Acquired by the Students According to Faculty

Item	Element	Competency	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
2	Use critical thinking skills.	Critical Thinking and Problem Solving.	Between	3.287	10	3.219	1.692	.088
			Within	257.007	139	1.849		
			Total	288.293	149			
3	Solve problems in different circumstances	Critical Thinking and Problem Solving.	Between	31.128	10	3.113	2.171	.023
			Within	199.332	139	1.434		
			Total	230.460	149			
1	Seek out continued education	Self-Directed Learning and Health Care Promotion	Between	40.200	10	4.020	2.144	.025
			Within	60.634	139	1.875		
			Total	300.833	149			
3	Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional	Self-Directed Learning and Health Care Promotion	Between	37.890	10	3.789	2.539	.008
			Within	200.443	139	1.492		
			Total	245.333	149			
4	Identify risk factors that can affect individuals and the population	Self-Directed Learning and Health Care Promotion	Between	24.107	10	2.411	1.657	.097
			Within	202.266	139	1.455		
			Total	226.373	149			
3	Talk with individuals from diverse populations.	Communication and Interpersonal Skills	Between	29.881	10	2.988	2.041	.033
			Within	203.453	139	1.464		
			Total	203.333	149			

Table 70 – Continued

Item	Element	Competency	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
2	Evaluate and manage contemporary models of oral health care management	Practice Management and Informatics	Between	25.731	10	2.573	1.657	.097
			Within	215.842	139	1.553		
			Total	241.573	149			
3	Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.	Practice Management and Informatics	Between	26.930	10	2.693	1.878	.053
			Within	199.343	139	1.434		
			Total	226.273	149			
2	Understand the meaning of Evidence-Based Dentistry	Evidence-Based Dentistry (EBD),	Between	33.860	10	3.386	2.085	.030
			Within	224.140	139	1.624		
			Total	258.000	149			
2	Participate with dental team members and other health care professionals in the management and health promotion for all patients	Establishment and Maintenance of Oral Health	Between	28.557	10	2.856	1.830	.061
			Within	216.883	139	1.560		
			Total	245.440	149			
3	Recognize and appreciate the need to contribute to the improvement of patient's	Establishment and Maintenance of Oral Health	Between	29.699	10	2.970	2.273	.017
			Within	180.328	139	1.307		
			Total	210.027	149			
5	Integrate the informed consent as a common practice.	Establishment and Maintenance of Oral Health	Between	57.428	10	5.743	3.340	.001
			Within	237.270	139	1.719		
			Total	294.698	149			
6	Utilize universal infection control guidelines for all clinical procedures.	Establishment and Maintenance of Oral Health	Between	39.607	10	3.961	2.505	.009
			Within	216.575	139	1.581		
			Total	256.182	149			

Table 70 – Continued

Item	Element	Competency	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
7	Obtain and interpret patient medical data, including a thorough intra/extra oral examination	Establishment and Maintenance of Oral Health	Between	26.677	10	2.668	1.752	.075
			Within	210.088	139	1.522		
			Total	236.735	149			
2	Consult with or refer to professional colleagues when indicated.	Professionalism	Between	25.318	10	2.532	1.864	.055
			Within	187.474	139	1.359		
			Total	212.792	149			
4	Provide quality assurance when treating patients.	Professionalism	Between	21.420	10	2.142	1.658	.097
			Within	179.573	139	1.292		
			Total	200.993	149			

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

For the student's clinical skills less achieved as perceived by the faculties, regarding the the survey section about the demonstration of clinical skills in several dentistry areas, Faculty were asked to rate their confidence level that their students can effectively perform several elements asked of several clinical areas. There were found four groups of areas where they showed statistically significant differences (p <0.05).

Regarding these clinical skills, they were asked grouped in the surveys. However, it was possible to identify the specific clinical skills where Faculty responded that they were not confident that their students perform well regarding Periodontics, Pediatric Dentistry, Restorative Dentistry, and Endodontics (items 1, 2,3, and 5 of these group). Faculty said they were not confident that their students could: prevent, diagnose and manage periodontal diseases (item No.1), manage the oral health care of children and adolescents (item No. 2), manage the oral health care of adults (item No.3), and diagnose, identify and manage pulpal and peri-radicular diseases (item No.5). See Table71, where I present the areas that, according to faculties, students did not effectively acquire clinical skills to treat patients, evidenced by differences regarding student's acquisition of clinical skills achievement.

Regarding Cariology, and Orthodontics, precisely (item 1 of these two areas), they were not confident of preventing and controlling Dental caries. They also said they were not confident that their students could do Restorative dentistry, Preventive Dentistry, and Periodontics. DR schools of dentistry must revise these items that are not being entirely achieved by the dental students. However, not all universities reported the same differences. Due to confidentiality and as agreed with dental school's directors, this information regarding the overall university performance will only be delivered independently to each university and will not be reported as part of this dissertation. See table 71 to inspect Faculty's differences' in their student preparedness in specific elements that compound clinical areas.

Table 71

Differences in Some Elements of the Clinical Skills by Students According to Faculty

Item	Element	Clinical Areas	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
4	Manage restorative procedures that preserve tooth structure, maintain function and are esthetic	Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.	Between Within Total	26.865 174.129 200.993	8 144 152	3.358 1.209	2.777	.007
1	Prevent and control dental caries	Cariology, Orthodontics	Between Within Total	19.399 166.143 185.542	8 144 152	2.425 1.154	2.102	.039
1	Restorative dentistry	Restorative dentistry	Between Within Total	27.888 218.949 246.837	8 144 152	3.486 1.520	2.293	.024

Note: Likert Scale Rate your level of confidence for being able to do the following. 1=Not at all confident 2=Only slightly confident 3=Somewhat confident 4=Moderately confident 5=Strongly confident 6=100% confident.

For the dental curriculum components (teaching strategies, preclinical/ clinical hours, community service, evidence-based dentistry), it was inspected that several elements affect the acquisition of competencies according to faculty. After conducting the Univariate ANOVA and verified by the Welch's test, for the faculty survey, it was evident that there were 28 items (46%) with a statistically significant difference ($p < 0.05$) that the faculty perceived were affecting their student's acquisition of competencies and clinical skills. However, regarding the percentage similarity of acquisition of competencies and clinical skills related to the program components, 54

% (33 items) were perceived as achieved by the students in the different areas evaluated (p >0.05). Overall, the program components help students in the acquisition of required competencies. However, there were 28 items (46%) that showed significant differences (p<0.05).

Table 84 presents the data from the ANOVA analysis between and within faculty regarding preclinical courses. There was a significant difference within and between the groups (F= 1.719, p <.082), (F= 2.150, p <.024), (F=2.268, p <.017), (F=2.273, p <017), (F=3.134, p <.001), (F=1.919, p <.047), (F=1.852, p <.057), (F=2.576, p <.007). These preclinical courses are affecting the student's acquisition of clinical skills, according to faculty.

Table 72

Preclinical Courses Affecting the Student's Acquisition of Clinical Skills According to Faculty

Item	Element	Preclinical Courses	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
1	Dental Anatomy	Dental Anatomy	Between	38.546	10	3.855	1.719	.082
			Within	311.647	139	2.242		
			Total	350.193	149			
2	Operative dentistry	Operative dentistry	Between	30.465	10	3.047	2.150	.024
			Within	196.928	139	1.417		
			Total	227.393	149			
3	Dental Anesthesia	Dental Anesthesia	Between	30.323	10	3.032	2.268	.017
			Within	185.837	139	1.337		
			Total	216.160	149			
4	Endodontics	Endodontics	Between	30.072	10	3.007	2.273	.017
			Within	183.901	139	1.323		
			Total	213.973	149			
5	Prosthodontics	Prosthodontics	Between	32.415	10	3.242	3.134	.001
			Within	143.778	139	1.034		
			Total	176.193	149			
6	Periodontics	Periodontics	Between	24.337	10	2.434	1.919	.047
			Within	176.303	139	1.268		
			Total	200.640	149			

Table 72 – Continued

Item	Element	Preclinical Courses	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
7	Oral Surgery	Oral Surgery	Between	19.282	10	1.928	1.852	.057
			Within	144.718	139	1.041		
			Total	164.000	149			
8	Biomaterials	Biomaterials	Between	30.799	10	3.080	2.576	.007
			Within	166.195	139	1.196		
			Total	196.993	149			

[*Note:* Likert Scale. Indicate level of agreement.Implementation of preclinical courses. 1 Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree]. All preclinical courses were found with significant differences $p < .05$.

Table 73 shows the preclinical courses with fewer hours than required to teach students how to treat patients according to faculty. Table 73 presents the ANOVA analysis data between and within faculty regarding the hours dedicated in the preclinical courses to teach dental students how to treat patients. There was a significant difference within and between the groups (F = 3.114 $p < .027$), (F =2.988 $p < 002$), (F = 1.797, $p < .066$), (F= 2.450, $p < .010$), and (F =2.306, $p < .015$).

Table 73

Preclinical Courses with Fewer Hours Than Required to Teach Students According to Faculty

Item	Element	Preclinical Courses	ANOVA Perceptions of Attainment	Sum of squares	*Df*	Mean Square	*F*	*Sig*
2	Operative dentistry	Operative dentistry	Between	32.559	10	3.256	3.114	.027
			Within	212.568	138	1.540		
			Total	245.128	149			
3	Dental Anesthesia	Dental Anesthesia	Between	35.624	10	3.562	2.988	.002
			Within	165.716	138	1.192		
			Total	201.333	149			

Table 73 - Continued

Item	Element	Preclinical Courses	ANOVA Perceptions of Attainment	Sum of squares	*Df*	Mean Square	*F*	*Sig*
4	Endodontics	Endodontics	Between	26.288	10	2.529	1.797	.066
			Within	195.652	138	1.408		
			Total	220.940	149			
7	Oral Surgery	Oral Surgery	Between	31.836	10	3.184	2.450	.010
			Within	180.624	138	1.299		
			Total	212.460	149			
8	Biomaterials	Biomaterials	Between	31.570	10	3.157	2.306	.015
			Within	190.303	138	1.369		
			Total	221.873	149			

[*Note:* Likert Scale. Indicate level of agreement. Hours dedicated in preclinical courses. 1 Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree].

Table 74 presents the data from the ANOVA analysis between and within faculty regarding the areas related to conducting research, where it can be observed that the dental curriculum did not emphasize this practice. There was a significant difference within and between the groups (F = 1.863 $p < .056$), (F =1.683 $p < .091$), and (F= 2.159, $p < .024$).

Table 74

Elements Related to Research Not Emphasized in the Dental Curriculum According to Faculty

Item	Element	Activities Related to Dental Research	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
1	Conducting dental research	Conducting dental research	Between	27.921	10	2.792	1.863	.056
			Within	208.372	139	1.499		
			Total	236.393	149			
2	To do systematic reviews of the literature in any of the dental courses that are taught.	To do systematic reviews of the literature in any of the dental courses that are taught.	Between	28.708	10	2.871	1.683	.091
			Within	235.420	139	1.706		
			Total	264.134	149			

Table 74 – Continued

Item	Element	Activities Related to Dental Research	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
3	Implementing best patient's treatments considering benefits and harms of alternative care options	Implementing best patient's treatments considering benefits and harms of alternative care options	Between Within Total	27.419 175.266 202.685	10 139 149	2.742 1.270	2.159	.024

Note: Likert Scale (Faculty's survey) The dental curriculum where I teach dedicates time to prepare the dental students effectively in these areas. 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Table 75 presents the data from the ANOVA analysis between and within faculty regarding the areas related to developing critical thinking skills. There was a significant difference within and between the groups (F = 2.490 < .009), (F =1.733 p < .0791), and (F=2.870, p <.*003*). According to the faculty, it was evidenced that they did not teach their students to think critically.

Table 75

Areas Related to Developing Critical Thinking Ability That Are Less Taught by Faculty

Item	Element	Competencies	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	F	*Sig*
1	Solve problems	Solve problems	Between Within Total	43.181 241.013 284.193	10 138 148	4.318 1.734	2.490	.009
2	Implementing best patient's treatments considering benefits and harms of alternative care options	Implementing best patient's treatments considering benefits and harms of alternative care options	Between Within Total	31.163 250.011 281.173	10 138 148	3.116 1.799	1.733	.079

Table 75 – Continued

Item	Element	Competencies	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	F	*Sig*
3	Think in a critical way	Think in a critical way	Between	40.237	10	4.024	2.870	.003
			Within	193.482	138	1.402		
			Total	233.718	148			

Note: Likert Scale (Faculty's survey) As a Professors I have taught to my students how to effectively 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree.

Differences in Preparednees preclinical. These values were found with significant difference $p <$ .059*

Regarding the question related to community service, faculties were asked to rate their level of agreement in the student's preparedness in several areas. Table 76 presents the ANOVA analysis data between and within faculty regarding preparedness due to community service.

Table76

Elements of Community Service Less Achieved by Students According to Faculty

Item	Element	Program Component	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
1	Being engaged in the community and strive to make it a better place	Community Service	Between	15.689	10	1.569	1,661	.096
			Within	131.304	139	.945		
			Total	146.993	149			

Note: The community service of my dental curriculum prepared effectively to 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree].

Table 77 presents the data from the ANOVA analysis between and within Faculty regarding the teaching strategies with statistical differences according to Faculty.

Table 77

Teaching Strategies with Differences Among Faculty

Item	Element	Teaching Strategy	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
13	Posters	Posters	Between	18.307	10	1.831	1.801	.066
			Within	141.266	139	1.016		
			Total	59.573	140			
14	Reflective journal	Reflective journals	Between	16.294	10	1.629	2.215	.020
			Within	102.266	139	.736		
			Total	118.560	140			

[*Note:* Likert Scale (Student's survey) My dental curriculum implements preclinical courses for these dental areas 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree]

Table 78 presents the data from the ANOVA analysis between and within Faculty regarding the clinical areas with differences according to Faculty. There was a significant effect with Diagnostic, Oral Surgery and Cariology (F = 1.832, $p < .060$), (F =2.720, $p < .004$), (F = 1.704 $p < .085$).

Table 78

Clinical Areas with Differences According to Faculty

Item	Element	Clinical Practices	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
1	Diagnostics	Diagnostics	Between	24.676	10	2.468	1.832	.060
			Within	187.197	139	1.347		
			Total	211.873	149			
7	Oral Surgery	Oral Surgery	Between	20.027	10	2.003	2.720	.004
			Within	102.346	139	.736		
			Total	122.373	149			

Table 78 - Continued

Item	Element	Clinical Practices	ANOVA Perceptions of Attainment	Sum of squares	*df*	Mean Square	*F*	*Sig*
8	Cariology	Cariology	Between	17.562	10	1.756	1.704	.085
			Within	143.271	139	1.031		
			Total	160.833	149			

Note: Clinical Areas

I also inspected the effect that the university caused students regarding their acquisition of competencies and clinical skills to treat patients. In the case of faculty, I took into account the university where they were teaching. By applying the Tukey statistic for the 28 items that significantly statistically differed, the minimum and maximum response values were determined based on the faculty and the different universities under the study, valued with 95% reliability.

The following table (No. 79) shows the difference in the mean averages of the competency and clinical skills achievement depending on the university attended. It can be observed the differences.

Table 79

Difference in the Mean Averages of the Competency and Clinical Skills Achievement Depending on the University Attended According to Students

Competencies	Universities (*n*)								
Rate your level of confidence that your students can do the following.	1(2)	2(25)	3(6)	4(20)	5(5)	6(12)	7(30)	8(8)	9(19)
Critical Thinking and Problem Solving									
Mean	4	4.04	3.67	3.35	4.6	3.58	4.53	2.88	3.84
Self-Directed Learning and Health Care Promotion									
Mean	4.5	4.04	4	2.9	4.2	4.08	4.3	3.75	3
Communication and interpersonal skills									
Mean	5	4.52	4.33	4.05	4.8	4.83	4.66	4	4.16

Table 79 - Continued

Competencies	Universities (*n*)								
Rate your level of confidence that your students can do the following.	1(2)	2(25)	3(6)	4(20)	5(5)	6(12)	7(30)	8(8)	9(19)
Practice Management and Informatics									
Mean	4	4	4	4	4.2	4.58	3.97	2.63	3.58
Patient Care									
Mean	3.5	3.76	4	3.25	4.4	3.83	4.07	2.75	3.37
Evidence-Based Dentistry (EBD)									
Mean	3.5	4.12	4	3.75	4	4.33	4.72	2.88	3.53
Establishment and maintenance of oral health									
Mean	4.5	4.64	3.67	4.55	5	4.33	4.9	3.38	3.95
Professionalism									
Mean	4	4.4	4.33	4.65	5.2	5	5	4	4.37
My students can practice Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics									
Mean	4	4.24	4	4	4.6	4.67	5.03	3.5	3.95
Oral Surgery, Prosthodontics, Dental Public Health.									
Mean	4.5	4.68	4.83	4.25	4.8	5.08	4.97	4	4.05
Cariology, Orthodontics									
Mean	3.5	4	3.83	3.75	4.2	4.33	4.03	3.75	3.63

Note: Difference in the Mean Averages of the Competency and Clinical Skills Achievemen

Industry Professionals results. Before exploring this question, I initially ran a Univariate ANOVA or General Linear Model for the industry professionals' results. Univariate ANOVA was conducted to inspect similarities and differences between the industry professionals. Also, to check their perceptions regarding their employees/supervisees' current acquisition of competencies and clinical skills to treat patients. The last part of the survey regarding the program component was not asked for industry professionals because they lacked knowledge regarding dental curriculum components.

Regarding the ANOVA, it was observed that the population of industry professionals was small (42 participants), and this type of analysis could lose statistical power with this population. Despite this fact, the ANOVA was conducted with industry professionals. After finishing the ANOVA, there were observed statistically significant differences in the survey ($p< 0.05$). However, a post hoc analysis demonstrated that only one item was statistically significant. Hence, I decided to run a Kruskal Wallis non-parametric Test to explore the mean differences.

Non-parametric analysis was performed using the Kruskal-Wallis statistic to explore competencies and clinical skills achievement of dental graduates from nine DR schools of dentistry, which were employees or supervisees by the industry professional's participants the study. I checked if there was a difference in competency and clinical skills achievement, depending on the university the dentists had graduated from. These results are explained in the following paragraphs.

Regarding the industry professional's responses, the Kruskal-Wallis H Test showed no differences between the medians, all values were not statistically significant ($p >.05$), or all medians were equal. Overall, industry professionals' responses indicated no significant differences regarding their employees/supervisees concerning demonstrating competency and clinical skills achievement ($p>.05$). Thus, multiple comparisons were not made because the global sample does not show significant differences. All dentists demonstrated competency achievement according to industry professionals (See these results in Table 80).

I conducted a second Kruskal–Wallis *H* analysis. I checked the dentist's preparedness depending on the university they had graduated from to determine whether any of the medians' differences were statistically significant. After conducting the Kruskal-Wallis one-way ANOVA statistical analysis-of-variance-by-ranks, there were observed differences between some of the medians statistically significant ($p< .05$). Regarding dentist preparedness associated with the

university attended, I rejected Ho in this secondary analysis. The H_1 is accepted: At least one median was different. According to industry professionals' participants, there were observed differences in the dentist's performance, depending on the university these dentists had graduated from. Differences found in these scores offer additional information that not all universities' dental curriculum would need to be enhanced in the same proportion. It was observed in the level of preparedness, confidence, and agreement perceived by industry professionals regarding the practicing dentist's readiness level depending on the university attended. However, these results also provide additional evidence that not all universities help students acquire these competencies in the same way. Each university should revise these results to identify the weakened areas and provide a curriculum enhancement so the labor market could be more confident with these competencies.

University names are protected due to confidentiality. Results are shown without identifying the university names. Regarding this question, there were found statistically significant differences between industry professional's perceptions regarding the different universities where their employees/supervisees were graduated and their level of preparedness ($p<$ .05). It seems preparedness is associated with the university. Also, it was observed that the university with higher scores was the university with more graduates working in these places where the survey was conducted, as it was verified in the descriptive section (See Appendix M).

I inspected the industry professionals' pattern of responses regarding the dentist's preparedness associated with the university. The university with (SD= 0.72) compared with other institutions, showed the best performance. It can be observed that as higher is the deviation, the dispersion also increases or is observed an expanded range of responses, translated into less solidity of criteria regarding the dentist's preparedness depending on the university attended, according to the industry professional perceptions.

Industry professionals were asked to select from which university they think the dentists they hire or supervise they perceived these dentists were most prepared. They had to rate their level of confidence using a 6-point Liker Scale. 1. Not at all confident, 2. Only slightly confident, 3. Somewhat confident 4. Moderately confident 5. Strongly confident 6. 100% confident. The universities are not identified in these results to protect their identity.

Results are shown in table 80.

Table 80

Industry Professionals' Pattern of Responses Regarding the Dentist's Preparedness Associated With the University

University	*N*	*SD*	*M*
1	35	.95	4.3
2	33	.94	4.4
3	38	.72	4.7
4	25	1.31	2.8
5	25	1.40	2.8
6	27	1.43	3.0
7	30	.95	4.3
8	23	1.45	3.3
9	20	1.32	3.0

Note: Dentist's Preparedness Associated With the University

Research question 3: To what extent do various program preclinical and clinical dental program components predict the perceived acquired competencies and clinical skills?

The third research question asked the extent to which various program preclinical and clinical dental program components predicted the perceived acquired competencies and clinical skills. Regression analysis was used to evaluate the association between the competencies and clinical skills and dental program preclinical and clinical components while controlling for

potential confounders. To answer this question, I used for each model, as independent variables the respondents' perceptions (students, practicing dentists, and faculty) of the degree to which the preclinical components or clinical components of the program prepared them (students or graduates) to practice (8 preclinical courses and 8 clinical courses). The other independent variable in the models was the dummy variable for the institution the respondents identified. The dependent variables were the ADA clinical competencies summary score in one model and the other model's clinical skills summary score. In research questions one and two, I observed that the university affected the acquisition of competencies and clinical skills in all participants. Thus, I also used the university as a third variable to explore its influences on independent (8 preclinical courses and 8 clinical courses) and dependent variables (competencies and clinical skills summary scores).

Finally, a multiple linear regression (MLR) analysis was used to test if various program preclinical and clinical dental program components (independent variables) significantly predicted participants' ratings of competencies and clinical skills (dependent variables). MLR analysis was run for the students, practicing dentists, and faculty groups to predict the perceived acquired competencies ad clinical skills. Regarding the survey section related to program components, it was not asked for industry professionals because they lack knowledge of this subject. Models with different sets of predictors were evaluated using model fit statistics. I used a stepwise selection method to keep only the significant preclinical and clinical dental program components and other program components in the model.

The overall model for MLR, given n observations, was $y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ldots \beta_p x_{ip} + \varepsilon_i$ for $i = 1,2, \ldots n$. Each of the variables was analyzed individually, and the degree of predictability of each one was measured. The index was standardized once the irrelevant

questions were eliminated. The global average value by sector rate was obtained in the different sections that I explored, and it was placed and weighted from each value of the six points Likert scale that was used (1= Not at all confident to the value 6 = 100% confident, in the case of the competencies and clinical skills, and 1=Strongly disagree to 6=Strongly agree, in the case of the program components). I used the stepwise selection method for variable selection.

SPSS fitted multiple models, but the rule of parsimony was used to select the most appropriate. Since I had a large sample, I assumed the first two assumptions (linear relationship and multivariate normality distributed residual values) were met. There was a linear relationship between the outcome variables and the independent variables. Scatterplots were inspected to see if there was a linear or curvilinear relationship (Garson, 2012; Lomax, & Hahs-Vaughn, 2012). However, not all the assumptions were met in some of the populations.

Another inspected aspect was multicollinearity, meaning that the independent variables were not positively correlated. This assumption was inspected using the Variance Inflation Factor (VIF) values. Homoscedasticity (the variance of error terms are related across the values of the independent variables). A plot of standardized residuals versus predicted values confirmed whether points were equally distributed across all independent variables (Garson, 2012; Lomax, & Hahs-Vaughn, 2012). Assumption one: My dependent variable was measured at the ordinal or continuous level (Garson, 2012; Lomax & Hahs-Vaughn, 2012). Another Assumption explored was that multiple linear regression needs at least two independent variables, which can be nominal, ordinal, or interval/ratio level variables. A rule for the sample size is that regression analysis requires at least 20 cases per independent variable (Garson, 2012; Lomax, & Hahs-Vaughn, 2012). This rule was achieved. Assumption three: There was the independence of observations. Assumption Four: I determined whether the distribution of scores for each group of the independent variable had the same variability (Garson, 2012; Lomax, & Hahs-Vaughn, 2012).

This study had 25 critical variables, as broken into four categories: eight dental competencies and nine clinical skills, nine dental program components, and the university program they attended. Each of these 25 variables was created by collapsing multiple items on the survey regarding that construct. Each of the variables was analyzed individually, and the degree of predictability of each one was measured. Regarding the competencies and clinical skills, summary scores were obtained using the median or pre-determined cut-off points were considered. To answer this question, I present the versions of the different multiple regression models inspected to predict program components that help students' competency and clinical skills attainment for each of the analyzed variables. I present the results of the multiple regression models for competencies and clinical skills by the populations studied. I also present eight models for each of the universities attended, demonstrating the relationship between the acquisition of competencies regarding the university, and eight models for each university demonstrating the acquisition of clinical skills regarding the university attended per population studied. Regarding the university explored, in some universities, I tried to analyze the degree to which all program preclinical, and clinical components, predicted the perceived acquired competencies and clinical skills. Unfortunately, it was not possible to determine a coherent model of predictors with these variables, and therefore there is no model for it.

Table 81 shows the variables list used for the regressions to predict the perceived acquired competencies and clinical skills. All variables used are shown.

Table 81

Multiple Regression Variable List

Variable Code	Variable Name	Variable Type	Variable Values
PC	Critical Thinking and Problem Solving	Continuous interval	1-6
AUTOSALUD	Self-Directed Learning and Health Care Promotion	Continuous interval	1-6
COHAINTER	Communication and Interpersonal Skills	Continuous interval	1-6
ADCONIN	Practice Management and Informatics	Continuous interval	1-6
ATPAC	Patient Care	Continuous interval	1-6
OBE	Evidence-Based Dentistry (EBD)	Continuous interval	1-6
MANTE	Maintenance of oral health	Continuous interval	1-6
PROF	Professionalism	Continuous interval	1-6
UNIVEACTUAL	University	Continuous interval	1-9
CONFIANZAVARIOS	Dental Program Components	Continuous interval	1-9
CONFIANZA CIRU	Clinical components	Continuous interval	1-9
CONFIANZA PERIO			
CONFIANZAENDO			
CONFIANZAPROT			
CONFIANZAODONTOP			
CONFIANZARESTAURA			
CONFIANZBIOMA			
CONFIANZASALUDP			
CONFIANZACARIO			

Note: Multivariate Multiple Regression List Including All Variables

Students Results

I analyzed the degree to which all program preclinical and clinical dental program components and university attended, predicted the perceived acquired competencies and clinical skills regarding students' responses of student's acquisition of competencies, and clinical skills summary scores. Predictors in this model explain a small but statistically significant amount of variance in the dental students' perception of competencies' acquisition. The low variance forced me to conduct 15 multiple linear regressions analysis eliminating variables in all the regressions.

Here, I present the first version of the multiple linear regression model for participants' Competencies acquisition. The degree to which all program preclinical and clinical dental program components and the university attended predicted the perceived acquired competencies and clinical skills.

The outcome variable *R2* =.175 *F*(1, 151)=32.137, *p* =.000. All the assumptions of the multiple linear regression were met. Although the assumptions were met, it was observed a limited prediction power suggested by an *R2* =.175 *F*(1, 151)=32.137, *p* =.000. The model in Table 95 suggests that the preclinical courses of Operative Dentistry .427 *p*=.000 are important dental students' competencies' acquisition predictors.

The non-statistically significant predictors were: the preclinical practices of Dental Anatomy .042 *p*=.641, the clinical practices of Operative Dentistry .038 *p*=.706, the preclinical practices of Dental Anesthesia .060, *p*=.487, the preclinical practices of Endodontics .062 *p*=.459, the preclinical practices of Periodontics, .097 *p*=.225, the preclinical practices of Oral surgery, .133 *p*=.097, the preclinical practices of Prosthodontics .092 *p*=.239, the preclinical practices of Biomaterials .016 *p*=.851, the clinical practices in Diagnostics -.024 *p*=.863, the clinical practices of Endodontics .211 *p*=.171, the clinical Practices of Pediatric Dentistry -.151 *p*=.199, the clinical practices of Cariology .-080 *p*=.366, and I currently study in X university -.007 *p*=.926.

All the assumptions of the multiple linear regression were met. The other inspected aspect was multicollinearity, meaning that the independent variables were not highly correlated with each other, as inspected though the Variance Inflation Factor (VIF) values = 1.000. The normality assumption and the outlier assumption were met in this model. Residuals were independent—as assessed by a Durbin-Watson statistic of 2.023. I also determined whether the distribution of scores for each group of the independent variable had the same variability. This assumption was met.

Even though the assumptions were met, it was observed a limited prediction power suggested by *R2* =.175 *F*(1, 151)=32.137, *p* =.000. See Table No. 82 with the adjusted multiple regression model to predict dental students' Competencies acquisition.

Table 82

Adjusted Multiple Regression Model to Predict Dental Students' Competencies Acquisition

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Dev. Error	Beta	*t*	*Sig.*	Tolerance	VIF
(Constant)	2.874	.400		7.189	.000	2.874	.400
Clinical practices prepared effectively to treat patients **[Operative Dentistry]**	.427	.075	.419	5.669	.000	.427	.075

Constant: Competencies Multiple Regression Model to Predict Dental Students' Competencies Acquisition

Regarding the acquisition of Clinical Skills, I analyzed the degree to which all program preclinical and clinical dental program components and university attended, predicted the perceived acquired clinical skills summary scores according to the student's perception. Predictors in this model explain a small but statistically significant amount of variance in the dental students' perception of competencies' acquisition. The low variance forced me to conduct three multiple linear regression analyses eliminating variables in all the regressions. Here, I present the third version of the multiple linear regression model for participants' Clinical Skills acquisition and the degree to which all program preclinical and clinical dental program components and the

university attended predicted the perceived acquired clinical skills. The outcome variable *R2* =.158 *F* (1, 149) =6.088, *p* =.034.

All the assumptions of the multiple linear regression were met. Although the assumptions were met, it was observed a limited prediction power suggested by an *R2* =.158 *F* (1, 149) =6.088, *p* =.034. The model in Table 96 suggests that the clinical practices in Oral Surgery .286 *p*=0.000, the University attended -.269 *p*=0.000, and Prosthodontics' preclinical practices -.196 *p*= .015 are important dental students' clinical skills' acquisition predictors.

The non-statistically significant predictors were: the preclinical practices of Dental Anatomy .041 *p*=.602, the preclinical practices of Operative Dentistry .050 *p*=.528, the preclinical practices of Dental Anesthesia .009, *p*=.911, the preclinical practices of Endodontics -.059 *p*=.453, the preclinical practices of Periodontics,- .054 *p*=.496, the preclinical practices of Prosthodontics -.104 *p*=.186, the preclinical practices of Oral Surgery .004 *p*=.955, the clinical practices in Biomaterials -.044 *p*=.577, the clinical practices of Diagnostics -.019 *p*=.848, the clinical practices of Operative Dentistry .037 *p*=.720, the clinical Practices of Periodontics -.071 *p*=.534, the clinical practices of Oral Surgery .250 *p*=.122, the clinical practices of Pediatric Dentistry .051 *p*=.652, the clinical practices of Endodontics -.071 *p*=.502, the clinical practices of Cariology .001 *p*=.995. All the assumptions of the multiple linear regression were met. The other inspected aspect was multicollinearity, meaning that the independent variables were not highly correlated with each other, as inspected through the Variance Inflation Factor (VIF) values =1.002, 1.117, and .895. The normality assumption and the outlier assumption were met in this model. Residuals were independent—as assessed by a Durbin-Watson statistic of 2.006. I also determined whether the distribution of scores for each group of the independent variable had the same variability. This assumption was met.

Even though the assumptions were met, it was observed a limited prediction power suggested by *R2* =.158 *F* (1, 149) =6.088, *p* =.034. See Table No. 83 with the adjusted multiple regression model to predict dental students' Clinical Skills acquisition.

Table 83

Adjusted Multiple Regression Model to Predict Dental Students' Clinical Skills Acquisition

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	*Sig.*	Tolerance	VIF
3	(Constant)	13.238	8.641		1.532			
	I currently study at	-2.198	.615	-.269	-3.575	.998	.998	1.002
	The clinical practices prepared me effectively **[Oral Surgery]**	5.231	1.454	.286	3.597	.895	.895	1.117
	The preclinical courses of prepared me effectively **[Prosthodontics]**	-2.932	1.188	-.196	-2.467	.895	.895	1.117

Note: Dependent Variable: Clinical Skills. Multiple Regression Model to Predict Dental Students' Clinical Skills Acquisition

Practicing Dentists Results

I analyzed the degree to which all program preclinical and clinical dental program components and university attended, predicted the perceived acquired competencies and clinical skills regarding practicing dentists' responses regarding student's dental competencies acquisition, and clinical skills summary scores. Predictors in this model explain a small but statistically significant amount of variance in the practicing dentists' perception of competencies' acquisition. The low variance forced me to conduct 14 multiple linear regressions analysis eliminating variables in all the regressions. Here, I present the 14th version of the multiple linear regression

model for participants' Competencies acquisition and the degree to which all program preclinical and clinical dental program components and the university attended predicted the perceived acquired competencies and clinical skills. The outcome variable *R2* =.200 *F*(2, 13)=3.477, *p* =.011.

All the assumptions of the multiple linear regression were met. Although the assumptions were met, it was observed a limited prediction power suggested by an *R2* =.200 *F*(2, 13)=3.477, *p* =.011. The model in Table 97 suggests that the preclinical courses of Dental Anatomy 1.526 *p*=.046, the clinical practices of Endodontics *p*= .002, and the clinical practices of Oral Surgery-3.391*p*=.036 are important dental students' competencies' acquisition predictors according to practicing dentists perceptions.

The non-statistically significant predictors were: the clinical practices of Diagnostics -.024 *p*=.848, the preclinical practices of Operative Dentistry .078 *p*=.693, the preclinical practices of Biomaterials .017, *p*=.878, the preclinical practices of Prosthodontics .039 *p*=.737, the preclinical practices of Endodontics .092 *p*=.439, the preclinical practices of Dental Anesthesia -1.152 *p*=.325, and the clinical practices of Cariology .142 *p*=.215.

All the assumptions of the multiple linear regression were met. The other inspected aspect was multicollinearity, meaning that the independent variables were not highly correlated with each other, as inspected through the Variance Inflation Factor (VIF) values =1.053, 2.116, and 2.849. The normality assumption and the outlier assumption were met in this model. Residuals were independent—as assessed by a Durbin-Watson statistic of 1.817. I also determined whether the distribution of scores for each group of the independent variable had the same variability. This assumption was met.

Even though the assumptions were met, it was observed a limited prediction power suggested by *R2* =.200 *F*(2, 13)=3.477, *p* =.011. See Table No. 84 with the adjusted multiple regression model to predict dental students' Competencies acquisition.

Table 84

Adjusted Multiple Regression Model to Predict Dental Students' Competencies Acquisition According to Practicing Dentists

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Dev. Error	Beta	t	*Sig.*	Tolerance	VIF
(Constant)	.659	6.930		.095	.924		
Indicate your level of agreement with: The preclinical courses for these dental areas were enough to teach me how to treat patients [Dental Anatomyl]	1.526	.756	.202	2.020	.046	.950	1.053
The preclinical courses for these dental areas were enough to teach me how to treat patients [Pediatric Dentistry]	-2.415	1.296	-.265	-1.863	.066	.473	2.116
The preclinical courses for these dental areas were enough to teach me how to treat patients [Endodontics]	5.520	1.687	.572	3.272	.002	.312	3.210
The clinical practices for these dental areas were enough to teach me how to treat patients [Oral surgery]	-3.391	1.589	-.352	-2.134	.036	.351	2.849

Constant: Competencies Multiple Regression Model to Predict Dental Students' Competencies Acquisition

Regarding the acquisition of Clinical Skills, I analyzed the degree to which all program preclinical and clinical dental program components and university attended, predicted the perceived acquired clinical skills summary scores according to practicing dentists. Predictors in this model explain a small but statistically significant amount of variance in the practicing dentists' perception of the acquisition of clinical skills. The variance forced me to conduct one multiple linear regression analysis eliminating variables in this regression. Here, I present the first version of the multiple linear regression model for participants' Clinical Skills acquisition and the degree to which all program preclinical and clinical dental program components and the university attended predicted the perceived acquired clinical skills.

The outcome variable *R2* =.262 *F* (1, 94) =33.331, *p* =.000. All the assumptions of the multiple linear regression were met. Although the assumptions were met, it was observed a limited prediction power suggested by an *R2* =.262 *F* (1, 94) =33.331, *p* =.000. According to practicing dentists, the model in Table 85 suggests that the clinical practices in Oral Surgery .555 *p*=.000 are important dental students' clinical skills' acquisition predictors.

The non-statistically significant predictors were: I graduated in X University .015, p=.867, the preclinical practices of Operative Dentistry -.044 *p*=.629, the preclinical practices of Operative Dentistry .050 *p*=.528, the preclinical practices of Dental Anesthesia .045, *p*=.615, the preclinical practices of Endodontics -.006 *p*=.948, the preclinical practices of Prosthodontics .031 *p*=.732, the preclinical practices of Periodontics -.048 *p*=.596, the clinical practices of Oral Surgery .044 *p*=.577, the clinical practices of Biomaterials .101 *p*=.258, the clinical practices of Diagnostics .143 *p*=.200, the clinical Practices of Operative Dentistry .124 *p*=.357, the clinical practices of Pediatric Dentistry .152 *p*=.202, the clinical practices of Cariology -.096 *p*=.366. All the assumptions of the multiple linear regression were met. The other inspected aspect was multicollinearity, meaning that the independent variables were not highly correlated with each

other, as inspected through the Variance Inflation Factor (VIF) values =1.000. The normality assumption and the outlier assumption were met in this model. Residuals were independent—as assessed by a Durbin-Watson statistic of 2.232. I also determined whether the distribution of scores for each independent variable had the same variability. This assumption was met.

Even though the assumptions were met, it was observed a limited prediction power suggested by *R2* =.262 *F* (1, 94) =33.331, *p* =.000. See Table No. 85 with the adjusted multiple regression model to predict dental students' Clinical Skills acquisition.

Table 85

Adjusted Multiple Regression Model to Predict Dental Students' Clinical Skills Acquisition According to Practicing Dentists'

Model	Unstandardized Coefficients		. Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	*Sig*	Tolerance	VIF
(Constant)	1.581	.513		3.083	.003		
The clinical practices prepared me effectively **[Oral Surgery]**	.555	.096	.512	5.773	.000	1.000	1.000

Constant: Competencies Multiple Regression Model to Predict Dental Students' Clinical Skills Acquisition

Faculty Results

I analyzed the degree to which all program preclinical and clinical dental program components and university attended, predicted the perceived acquired competencies and clinical skills regarding facultys' responses of student's acquisition of competencies, and clinical skills summary scores. Predictors in this model explain a small, but statistically significant amount of

variance in the practicing dentists 'perception of the acquisition of competencies. The low variance forced me to conduct two multiple linear regressions analysis eliminating variables in all the regressions. Here, I present the firts version of the multiple linear regression model for participants' Competencies acquisition and the degree to which all program preclinical and clinical dental program components and the university attended predicted the perceived acquired competencies and clinical skills. The outcome variable *R2* =.184 *F*(1, 148)=33.382, *p* =.000.

All the assumptions of the multiple linear regression were met. Although the assumptions were met, it was observed a limited prediction power suggested by an *R2* =.184 *F*(1, 148)=33.382, *p* =.000. The model in Table 86 suggests that the preclinical practices of Prosthodontics .561 *p*=.000 are important dental students' competencies' acquisition predictors according to faculties perceptions.

The non-statistically significant predictors were: I actually teach in X university -.075 *p*=.313, the preclinical practices of Dental Anatomy .136 *p*=.090, the preclinical practices of Operative Dentistry .176, *p*=.021, the preclinical practices of Dental Anesthesia .127 *p*=.127, the preclinical practices of Endodontics .231 *p*=.085, the preclinical practices of Periodontics .114 *p*=.161, the clinical practices of Oral Surgery .104 *p*=.196, the clinical practices of Cariology .124 *p*=.265, and the clinical practices of Dental Anatomy .048 *p*=.582.

All the assumptions of the multiple linear regression were met. The other inspected aspect was multicollinearity, meaning that the independent variables were not highly correlated with each other, as inspected through the Variance Inflation Factor (VIF) values =1.000. The outlier assumption were met in this model. Residuals were independent—as assessed by a Durbin-Watson statistic of 1.920. I also determined whether the distribution of scores for each group of the independent variable had the same variability. This assumption was met.

Even though the assumptions were met, it was observed a limited prediction power suggested by *R2* =.184 *F*(1, 148)=33.382, *p* =.000. See Table No. 86 with the adjusted multiple regression model to predict dental students' Competencies acquisition according to Faculty.

Table 86

Adjusted Multiple Regression Model to Predict Dental Students' Competencies Acquisition According to Faculty

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Dev. Error	Beta	*t*	*Sig.*	Tolerance	VIF
(Constant)	1.375	.529		2.599	.010		
The Clinical practices of **Prosthodontics** Prepared me effectively to treat patients	.561	.097	.429	5.778	.000	1.000	1.000

Constant: Competencies Constant: Competencies Multiple Regression Model to Predict Dental Students' Competencies Acquisition

Regarding the acquisition of Clinical Skills, I analyzed the degree to which all program preclinical and clinical dental program components and university attended, predicted the perceived acquired clinical skills summary scores according to faculty's perception. Predictors in this model explain a small but statistically significant amount of variance in the practicing dentists 'perception of the acquisition of clinical skills. The low variance forced me to conduct three multiple linear regression analysis eliminating variables in all regressions. Here, I present the first version of the multiple linear regression model for participants' Clinical Skills acquisition and the degree to which all program preclinical and clinical dental program components and the university attended predicted the perceived acquired clinical skills.

The outcome variable *R2* =.157 *F* (1, 147) =27.294, *p* =.000. All the assumptions of the multiple linear regression were met. Although the assumptions were met, it was observed a limited prediction power suggested by an *R2* =.157 *F* (1, 147) =27.294, *p* =.000. The model in Table 100 suggests that the clinical practices in Periodontics .448 *p*=.000 are important dental students' clinical skills' acquisition predictors according to faculty perceptions.

The non-statistically significant predictors were: the preclinical practices of Dental Anatomy .186 *p*=.022, the preclinical practices of Operative Dentistry .196 *p*=.012, the preclinical practices of Dental Anesthesia .169, *p*=.085, the preclinical practices of Endodontics .245 *p*=.098, the preclinical practices of Prosthodontics .231 *p*=.712, the preclinical practices of Periodontics -.182 *p*=.097, the clinical practices of Oral Surgery .045 *p*=.090, the clinical practices of Cariology -.027 *p*=.811, the preclinical practices of Dental Anatomy .033 *p*=.775, and I currently teach in .029 *p*=.704.

All the assumptions of the multiple linear regression were met. The other inspected aspect was multicollinearity, meaning that the independent variables were not highly correlated with each other, as inspected though the Variance Inflation Factor (VIF) values =1.000. The normality assumption and the outlier assumption were met in this model. Residuals were independent—as assessed by a Durbin-Watson statistic of 1.885. I also determined whether the distribution of scores for each group of the independent variable had the same variability. his assumption was met.

Even though the assumptions were met, it was observed a limited prediction power suggested *R2* =.157 *F* (1, 147) =27.294, *p* =.000.. See Table No.87 with the adjusted multiple regression model to predict dental students' Clinical Skills acquisition according to faculty perceptions.

Table 87

Adjusted Multiple Regression Model to Predict Dental Students' Clinical Skills Acquisition According to Faculty

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	*t*	Sig.	Tolerance	VIF
(Constant)	2.093	.457		4.577	.000		
The clinical practices prepared me effectively **[Periodontics]**	.448	.086	.396	5.224	.000	1.000	1.000

Constant: Clinuical Skills. Multiple Regression Model to Predict Dental Students' Clinical Skills Acquisition

Chapter Four Closure

This chapter presented an analysis of the data collected from 400 respondents. The data was used to answer the three research questions that directed this study.Results indicated that, according to the students, practicing dentists, faculties, and industry professionals, DR dental students acquire the competencies and clinical skills to treat patients. Overall, non-significant differences were found in all surveys (students, practicing dentists, faculty, and industry professionals. Also, I checked if the program component helped students to acquire competencies. Overall, non-significant differences were found in all surveys (students, practicing dentists, and faculty). Program components were not asked for by industry professionals because they lacked knowledge regarding dental curriculum components. However, despite these results, I detected significant differences in the three stakeholder groups (students, practicing dentists, and faculty) in some elements that were part of a competency, clinical skill, or a program component.

Regarding the industry professional's perceptions, DR dentists demonstrate competency and clinical skills achievement. However, differences were found regarding the university where these dentists had graduated, according to industry professionals. Overall it appears to be a great deal of agreement between the four stakeholder groups regarding competencies and skills achieved by DR students before graduation. Nonetheless, much of the importance was placed on the overall acquisition of competencies and clinical skills.

There were several strong predictors of competencies among all participants, students, practicing dentists, and faculty. Regarding the students, the predictors for competencies acquisition were: the clinical practices of Operative Dentistry prepared effectively to treat patients. The predictors for Clinical Skills acquisition were: I currently study at, and the clinical practices in Oral Surgery prepared me effectively to treat patients and thee preclinical courses of Prosthodontics prepared me effectively to treat patients.

Regarding the practicing dentists, the predictors for competencies acquisition were:

the preclinical courses of Dental Anatomy were enough to teach me how to treat patients, the preclinical courses of Pediatric Dentistry were enough to teach me how to treat patients, the preclinical courses of Endodontics were enough to teach me how to treat patients, the clinical practices of Oral Surgery were enough to teach me how to treat patients. The predictors for clinical skills acquisition were: the clinical practices of Oral Surgery were enough to teach me how to treat patients.

Regarding the faculty, the predictors for competencies acquisition were: Prosthodontics' clinical practices were enough to teach me how to treat patients. The predictors for clinical skills's acquisition were: Periodontics' clinical practices were enough to teach me how to treat patients. A summary and discussion of the results with connections to prior research and comparisons amongst the respondents, conclusions drawn from this research, and recommendations are presented in Chapter 5.

CHAPTER V

SUMMARY OF RESULTS, DISCUSSION, AND CONCLUSIONS

This final chapter delivers an exploration of the problem analyzed in this study. A summary and discussion of the findings are offered, and conclusions and recommendations for future investigation. I describe my research questions connection to related literature, and I provide a table that compares my findings with previously cited literature with similar studies or others that contrast with my findings. Finally, this section also offers several recommendations to to improve DR dental education.

Many authors emphasize that it is vital to understand competence, competency-based education, and institutional and external factors that improve didactic quality (Chuenjitwongsa et al., 2018). While other authors affirm that the competencies attained by dental students determine the way such students develop their professional practice in the future as dental graduates (Alcota et al., 2016). A primary CBE curriculum objective is the student's acquisition of competencies aligned with the labor market requirements (Johnstone & Soares, 2014). At the same time, dentistry competency is referred to as incorporating knowledge, clinical skills, and behaving ethically, demonstrating the capacity to perform professional tasks independently without harming a patient (Chuenjitwongsa et al., 2018). The acquisition of the competency is related to incorporating several strategies within a dental curriculum. However, other factors, such as institutional features and external factors, are associated with undergraduate dental education. Nevertheless, these factors receive little attention in the literature (Chuenjitwongsa et al., 2018). Some authors had highlighted the importance of defining roles and professional development for the dental faculty (Chuenjitwongsa et al., 2018). These aspects are important topics for further research and some of the most important findings regarding this study.

This study aimed to gather perceptions regarding how well the current curriculums used in DR dental schools help students acquire ADA-required competencies and clinical skills. This research was a national study that gathered perceptions from vital stakeholders, including DR dental students, faculty, practicing dentists, and industry professionals. The final group consisted of a sample of industry professionals, dentists or not, from throughout the DR who currently were hiring or supervising Dominican dentists, in both public and private sectors.

This study's research design was a quantitative observation approach using online surveys sent via a Google form link by e-mail to participants or hard copies through a convenience sample method. For this study, I collected data of 400 participants that filled out surveys. The study participants included dental students, practicing dentists, faculty, and industry professionals within nine DR schools of dentistry that volunteered to participate. All owners or supervisors of main oral health care centers in private and public sectors that hired or supervised DR dentists were asked to participate. For this study, dental school directors in nine dental schools helped distribute a survey via a Google form link. The survey was sent to all their students about to graduate, and their entire dental faculty. The survey was also distributed to dental school graduates within five years of their graduation, and Industry professionals that hired or supervised dentists across the DR.

Findings Per Each Research Question

In this section, I describe the major findings per each research question.

Research Question 1

My study's first research question asked the perceptions of DR dental students, dental faculty, practicing dentists, and industry professionals in the DR regarding the following: a) students' current acquisition of competencies and clinical skills to treat patients; and b) current

incorporation of preclinical and clinical components, including evidence-based dentistry, community service, diverse pedagogical strategies, and incorporation of research into the dental program.

The findings revealed a similar agreement level among the four stakeholder groups regarding dental students' preparedness to practice dentistry effectively. The Mean values rate was 4.25 (corresponding to faculty) and *M*= 5.67 (corresponding to practicing dentists). Both Faculty and Industry professionals reported similar means and rated lower preparedness levels than practicing dentists and students, who reported higher and similar dentists' preparedness values.

Overall, all participants are agreed that DR dental students acquire the competencies and clinical skills necessary to practice dentistry (overall *M*= 4.96, *SD*= 1.07). Also, they agree that dental education program components help the students in this acquisition. However, I detected some differences in how these groups see various elements of competencies, clinical skills, and program components. In the following paragraphs, I show these results in tables that include findings of all populations.

For Part a of this question, participants were asked to rate their level of confidence to perform each of the competencies explored and the clinical skills explored. Table No. 88 shows these results per populations explored.

Table 88

Competency Level of Achievement According to all Participants

Item	Competency	Students Mean	Students *SD*	Practicing Dentists Mean	Practicing Dentists *SD*	Faculty Mean	Faculty *SD*	Industry Professionals Mean	Industry Professionals *SD*
1	Thinking in a critical way	4.68	1.24	5.27	1.08	2.33	1.52	3.91	.94
2	Seeking solutions for problems	4.92	1.19	5.30	1.00	2.33	1.15	4.09	1.30
3	Learning subjects on their own	4.62	1.31	5.08	1.08	2.00	1.73	3.82	1.47
4	Promoting patient's health care,	4.84	1.23	5.41	.92	2.67	1.52	4.28	1.25
5	Communicating with patients	5.11	1.17	5.51	.194	2.67	1.52	4.64	.80
6	Demonstrating that they are professionals,	5.20	1.13	5.20	1.13	3.00	2.00	4.36	1.20
7	Managing their office businesses, finances, and human resources	4.62	1.37	4.73	1.21	1.67	1.15	3.73	1.49
8	Implementing principles of evidence-based dentistry (EBD)	5.27	1.03	5.32	1.19	3.00	2.00	4.38	.67
9	Planning and making decisions	5.22	1.06	5.44	.96	2.33	1.52	4.18	1.32

*Note:*Rate your level of confidence in the following. 1) Not at all confident. 2) Only slightly confident. 3) Somewhat confident. 4) Moderately confident. Strongly confident. 5) 100% confident

Table 89 show the students, practicing dentists, and faculty results regarding each clinical area's preparedness level. Table No. 89 show these results

Table 89

Preparedness Level in Each Clinical Area According to Students, Practicing Dentists and Faculty

		Competency Level Students		Competency Practicing	Level Dentists	Competency Faculty	Level
Item	Clinical Skills Achievement	Mean	*SD*	Mean	*SD*	Mean	*SD*
1	Diagnostics	5.20	1.05	5.67	.577	4.00	2.44
2	Operative dentistry	5.21	1.03	5.67	.577	4.25	2.21
3	Pediatric Dentistry	5.14	1.02	5.67	.577	3.75	2.21
4	Endodontics	5.20	1.02	5.67	.577	4.00	2.44
5	Prosthodontics	5.05	1.10	5.33	1.15	4.50	2.38
6	Periodontics	5.18	1.13	5.67	.577	4.25	2.36
7	Oral Surgery	5.23	1.03	5.67	.577	4.25	2.36

*Note:*Rate your level of confidence in the following. 1)Not at all confident. 2)Only slightly confident. 3)Somewhat confident. 4) Moderately confident. Strongly confident. 5) 100% confident

For part b of the question, current incorporation of preclinical and clinical components, including evidence-based dentistry, community service, diverse pedagogical strategies, and incorporation of research into the dental program. I present the results per population studied. This question was not asked for industry professionals because they lacked knowledge of these components.

Table No. 90 show the participants level of agreement regarding the hours of pre-clinical courses and their level of preparedness in these courses. The results are reasonable good on a 6.0 scale as seen in Table 90 below.

Table 90

Participant's Level of Agreement Regarding the Hours of Pre-Clinical Courses and Their Preparedness Level in these Courses

Hours of Preclinical Courses	Students		Practicing Dentists		Faculty	
Implemented in These Dental Areas	Mean	*SD*	Mean	*SD*	*Mean*	*SD*
1.Dental Anatomy	5.16	1.32	5.33	1.15	3.50	2.08
2.Operative dentistry	5.16	1.31	5.00	1.00	3.50	2.08
3.Dental Anesthesia	5.28	1.15	5.67	1.57	3.50	2.08
4.Endodontics	5.18	1.246	3.00	1.00	3.53	1.95
5.Prosthodontics	4.73	1.36	5.00	1.00	3.53	1.95
6.Periodontics	5.15	1.24	4.98	1.42	4.75	1.50
7.Oral Surgery	5.10	1.26	4.97	1.26	4.50	1.73
8.Biomaterials	5.10	1.26	5.10	1.26	3.75	2.17
Implementation of Preclinical Courses in These Dental Areas						
1.Dental Anatomy	4.97	1.21	5.03	1.34	2.50	1.91
2.Operative dentistry	5.07	1.14	5.22	1.16	2.75	2.76
3.Dental Anesthesia	5.09	1.11	5.33	1.15	3.75	1.89
4.Endodontics	5.10	1.15	5.27	1.14	3.75	1.89
Implementation of Preclinical Courses in These Dental Areas						
5.Prosthodontics	4.76	1.26	4.93	1.19	3.25	2.06
6.Periodontics	4.88	1.32	5.00	1.22	3.25	2.06
7.Oral Surgery	4.96	1.25	5.07	1.34	3.75	1.89
8.Biomaterials	4.86	1.24	4.97	1.38	3.75	1.89

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree3= Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Table No. 91 show the teaching strategies implemented to teach dentistry according to students, practicing dentists and faculty.

Table 91

Teaching Strategies Implemented to Teach Dentistry According to Students, Practicing Dentists and Faculty

		Students		Practicing Dentists		Faculty	
Item	Teaching Strategies	Mean	*SD*	Mean	SD	Mean	*SD*
1	Cases to Solve problems	4.90	1.21	5.00	1.00	4.50	1.73
2	Lectures	5.23	1.04	5.00	1.00	5.00	.81
3	Recording videos	4.58	1.25	3.00	1.00	5.00	1.41
4	I had to do reflective journals	4.37	1.39	4.37	1.39	4.50	2.38
5	Brain storming	4.76	1.19	3.67	1.52	3.50	1.91
6	Video tutorials of any material taught	4.76	1.16	5.67	.577	3.50	1.91
7	Technology such as WhatsApp chat, face book, google docs, etc	4.93	1.12	4.33	1.52	4.25	2.21
8	Online classes	4.42	1.52	4.67	1.52	4.25	2.21
9	Cooperative learning	4.88	1.09	5.00	1.00	4.25	2.21
10	Preclinical sessions	5.25	1.04	5.33	1.15	4.25	2.21
11	Perform clinical rotations to help students who are working in the clinical areas	5.27	1.02	5.67	.577	3.75	2.21
12	Attend to conventions and extracurricular courses outside or inside the university	5.20	.98	4.67	1.15	4.25	2.21
13	Doing posters	4.37	1.40	4.33	4.50	2.38	

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3= Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Table No. 92 show the students, practicing dentists', and faculty level of preparedness due to the implementation of community service.

Table 92

Students, Practicing Dentists', and Faculty Level of Preparedness Due to the Implementation of Community Service

Elemenst of this Competency	Students		Practicing Dentists		Faculty	
	Mean	*SD*	Mean	Mean	*SD*	Mean
1.Being engaged in the community and strive to make it a better place	5.02	1.184	5.13	1.259	5.75	0.50
2.To appreciate the influence of social, cultural, and economic forces on oral health care	5.02	1.067	5.15	1.205	5.75	0.50
3. Health Promotion	5.19	1.134	5.25	1.170	5.75	0.50
4. To understand and cooperate to Local and Global Public Health	5.08	1.091	4.94	1.398	5.75	0.50
5. Experiences in Community Health as part of my dental curriculum	5.05	1.126	5.42	1.012	4.50	1.73
6. Extracurricular experiences in community health during my life as student	4.96	1.191	5.23	1.071	4.45	2.98

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Table No.93 show the students, practicing dentists, and faculty level of agreement regarding their preparedness in several competencies.

Table 93

Students, Practicing Dentists, and Faculty Level of Agreement Regarding their Preparedness in Several Competencies

Participant's Level of Preparedness	Program Component Level Students Results	My Professors have taught me how to effectively	Program Component Level Practicing Dentists	My Professors have taught me how to effectively	Program Component Level Faculty Results	As a professor, I have taught my students how to effectively
Competencies	Mean	*SD*	Mean	*SD*	Mean	*SD*
1.Solve problems	4.95	1.163	4.42	1.366	4.25	2.062
2.Implementing best patient's treatments considering benefits and harms of alternative care options	4.93	1.201	4.58	1.441	4.25	2.062
3.Think in a critical way	5.11	1.073	5.03	1.156	4.25	2.062
4.Seek solutions to cases	5.24	1.151	5.01	1.183	4.00	2.449
5. Conducting dental research	4.25	1.038	5.08	1.102	4.25	2.363
6. Systematic reviews of the literature in any of my dental courses.	4.50	1.268	5.14	1.236	4.25	2.363

Note: Likert Scale is changed in this part regarding program components 1=Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree

Finally, industry professionals were asked to rate their confidence level regarding the dentists' preparation they hire or supervise. In this case, they had to rate this preparation, considering the university where they studied dentistry. Before conducting this study, I agreed with the school's directors to protect the university identity when reporting the data. Thus, each university is represented with a number. (See Table 107 with these data). Although only nine universities participated in this study, industry professionals rated all their employees, including dentists graduated of 12 universities currently teaching dentistry within the DR. Illustrating this study and protecting all universities' confidentiality, results are shown, keeping the university names labeled with a number. See Table 94 with a dentist's preparedness per university attended, according to the industry professionals' point of view.

Table 94

Relation of Dentists Preparedness Per University Attended, According to Industry Professionals

		Competency Level	
Item	Universities	Mean	*SD*
1	**University No.1.**	4.73	0.90
2	**University No.2**	4.55	.93
3	**University No.3**	3.00	1.41
4	**University No.4**	3.00	1.41
5	**University No.5**	3.00	1.41
6	**University No.6**	4.36	1.02
7	**University No.7**	3.36	1.43
8	**University No.8**	3.73	1.42
9	**University No.92**	3.27	1.55
10	**University No.10**	3.00	1.48
11	**University No. 11**	4.64	0.92
Total		4.86	0.91

Note: Likert Scale. Indicate level of agreementDentists Preparedness. 1 Strongly disagree 2=disagree 3=Slightly disagree 4=Slightly agree 5=agree 6=Strongly agree]

According to industry professionals' points of view, these differences in mean rates regarding dentist's preparedness concerning the university raises questions regarding this preparation. Labor Market's input is vital as receivers of these graduates and should be considered by dental school administrators for future curriculum revision.

Research Question 2

My study's second research question asked about the similarities and differences between the four stakeholder groups' perceptions regarding students' current acquisition of competencies and clinical skills to treat patients and other preclinical and clinical dental program components. The perceptions of the acquisition of competencies and clinical skills in Dentistry varied among the three stakeholder groups.

Regarding the "students'" responses, I observed that 84% (65 items) were perceived as achieved by them in the different areas evaluated. Concerning the percentage of similarities of program components that help students acquire competencies and clinical skills in Dentistry, I found 50 items (75%) perceived by the students according to themselves as acquired by them. I inspected that these items had a non-statistical difference ($p > 0.05$). However, I found differences within the students in 17 items (25%) with a statistical difference ($p < 0.05$). I observed differences in acquiring competencies and clinical skills regarding the university where they currently study dentistry, according to their perceptions.

For the "practicing dentist's "competencies less achieved, seven items (9%) were found with statistical differences ($p< .05$). However, after conducting the Post Hoc Test to explore differences between multiple groups means, and after multiple comparisons, I did not find significant differences due to the high degree of similarity in the pattern of responses for practicing dentists ($p>.05$). Regarding the universities, I found differences between the different

universities the practicing dentists had graduated from. I explain these differences in the section regarding program components.

Regarding the "faculty" responses, for the student's competencies were less achieved as perceived by the Faculty, although overall Faculty perceived that their students acquire competencies and clinical skills, differences in attainment of competencies and clinical skills were found. Thus, it was observed that 30 items (37%) had a statistical difference ($p < 0.05$) in the faculty perception of the current acquisition of competencies and clinical skills by their students.

After inspecting the faculty surveys' competencies, the results revealed significant differences in several elements that are part of the competencies. Results showed that the highest score's competency had sought a solution to a case ($M = 5.24$, $SD = 1.151$). However, the competency with a lower score in this category was conducting dental research ($M = 4.25$, $SD = 1.038$). Although Faculty overall said students achieved these competencies when each element is examined independently, there are significant differences in the scores given by each of the faculty groups.

I found differences in two elements of the competency of critical thinking and problem-solving. I found differences in two elements of self-directed competency learning and health care promotion—one element corresponding to the competency Evidence-Based Dentistry (EBD). Five elements correspond to the competency Establishment and Maintenance of Oral Health, and two elements correspond to the competency Professionalism. These elements were using (a) critical thinking skills, (b) solving problems in different circumstances, and (c) seeking continued education. Also, (d) applying standard precautions, (e) using diverse methods that ensure the wellness and security of the patient and the oral health professional, (f) identifying risk factors that can affect individuals and the population, (g) talking with individuals from diverse populations, (h) evaluating and (i) managing contemporary oral health care management models.

(j) Understanding principles of risk administration, including informed consent and appropriate record-keeping for patient care. Also, (k) understanding the meaning of Evidence-Based Dentistry and participating with dental team members and other health care professionals in the management and health promotion for all patients. Other elements that I found with differences were (l) Recognizing and appreciating the need to contribute to the improvement of patients, (m) integrating informed consent as a common practice, and (n) utilizing universal infection control guidelines for all clinical procedures. (o) Obtaining and interpreting patient medical data, including a thorough intra/extraoral examination, (p) consulting with or refer to professional colleagues when indicated, and (r) providing quality assurance when treating patients. Also, I observed that 12 items had definitive relation with the university faculty was teaching and was observed in a graph of means identifying significant differences between the different universities where Faculty teach dentistry to these students.

According to faculty, students acquired competency and clinical skills in Dentistry in 63% (51 items) of areas evaluated. I also observed that 30 elements (37%) had a statistical difference in the faculty perception of their students' current acquisition of competencies and clinical skills. It was observed that 30 items (37%) had a statistical difference. Also, variations in the acquisition of competencies and clinical skills were observed regarding the university where faculty teach dentistry, and I found 28 items with differences regarding the university where faculty teach dentistry. These differences were observed in mean graphs. I explain these differences in the section regarding program components.

Regarding the "industry professional's" responses, overall, industry professionals' responses indicated no significant differences regarding their employees/supervisees concerning demonstrating competency and clinical skills achievement ($p>.05$). All dentists demonstrated competency achievement according to industry professionals. However, I detected differences

regarding the university the hired dentists had graduated from. I explain these differences in the section regarding differences according to the university origin.

Overall, all participants agreed that the Dominican dental students acquire the competencies and clinical skills necessary to treat patients. Students, practicing dentists, and faculty demonstrated a significant agreement regarding the program components that helped students acquire competencies and clinical skills. However, I found differences in several elements of competencies, clinical skills, program components, and the university attended. These differences are explained in the following paragraphs.

Differences regarding the level of preparedness in dentistry according to all participants. Regarding the level of preparedness to practice dentistry, there were differences in these scores, as perceived by three stakeholder groups (students, practicing dentists, and faculty). The Overall level of preparedness according to students was (*M*=5.42, *SD*= 1.01). Whereas, according to practicing dentists, was (*M*= 5.67, *SD*=.577). However, according to faculty, the student's preparedness to practice Dentistry was (*M*=4.25, *SD*= 2.36). Also, Industry Professionals rated the students' overall level of preparedness (*M*= 4.51, *SD*=1.45). The overall participant's score regarding the level of preparedness to practice Dentistry was (*M*=4.96, *SD*= 1.07).

Regarding the faculty responses, although faculty overall said students achieved these competencies, when each element is examined independently, there are significant differences in the scores given by each of the groups. Faculties are a crucial part of the students' acquisition of competencies. These findings highlight the importance of providing standards for dental education. Regarding the industry professionals' responses, I detected differences regarding the university where these dentists had graduated.

Differences regarding the acquisition of specific competencies. EBD. Dentists must demonstrate contemporary knowledge and understanding of the dental practices' broader issues, which indicates that they should handle the evidence-based dentistry concepts These same competencies and abilities are explored in my study. However, at least one element of the EBD competency was not achieved according to both students and faculty, which indicates the need for curriculum enhancement. These differences were also observed in the clinical skills responses.

Differences in some elements of competencies. The competencies where I found differences were: Critical Thinking, Self-Directed Learning, Health Promotion, and Professionalism. Regarding the student's responses, the elements of competencies (or sub-division of competencies) reported with significant differences and consequently less achieved according to the student's perceptions were: No. 4] Distinguish the difficulties in a problem. [No. 5] Detect the strengths and weaknesses of situations. [No. [No 2] Implement strategies for health promotion and prevention of oral diseases by educating individuals and communities. [No. 1] Apply ethical and legal standards in the provision of dental care. [No. 2] Consult with or refer to professional colleagues when indicated. [No. 5] Display professional behavior. It must be noted, that although there are statistically significant differences, the level of preparedness is not low (overall score was M = 4.83, SD =1.14). Nevertheless, these findings indicate the need to enhance the curriculum to improve all elements of competencies to be completely achieved by the students.

Research in dental education. I observed the need to improve research activities in DR dental education. There were significant differences in dental research implemented in dental education between the three stakeholder groups, students, practicing dentists, and faculty. According to faculty responses, the areas related to integrating research into their teaching activities where I found differences were conducting research, doing systematic reviews of the

literature in any of their dental courses, and teaching their students to implement best patient treatments considering benefits and harms of alternative care options.

Differences in the program components. Overall, the program components help students in the acquisition of required competencies, according to all populations. Regarding the students' results, I found differences in critical thinking achievement and problem-solving depending on the university. The level of achievement of health care promotion and self-directed learning depending on the university. The level of achievement of ethical and legal standards depending on the university. The level of achievement of referring to professional colleagues when indicated depending on the university. The level of achievement of demonstrating professional behavior depending on the university. The level of achievement in Restorative Dentistry depending on the university. The level of achievement in Periodontics, depending on the university. Although some differences were detected, the global mean was (M=4.93), which indicated an overall acquisition of competencies, and clinical skills, based on the program components, according to the student's perceptions.

According to faculty, 28 items (46%) showed significant differences (p<0.05. The areas were related to several program components. Regarding the preclinical courses implemented, I found differences in the following preclinical courses:(a) Dental Anatomy, (b)Operative Dentistry(c)Preventive Dentistry(d) Prosthodontic courses, (e)Periodontic courses, (f) Oral Surgery courses, and (g)Biomaterials courses. I also observed differences regarding the hours in several preclinical courses: (a) Dental Anatomy, (b) Operative Dentistry, (c) Dental Anesthesia, (d) Endodontics, (e) Oral Surgery, (f) Biomaterials.

Also, I found differences in other program components related to research, evidence-based dentistry, critical thinking, and community service competencies: (a) Implementing systematic reviews of literature, (b) implementing best patient treatments considering the benefits and harms

of alternative care options, (c) teaching to solve problems, (d) teaching to think critically, (e) teaching to being engaged in the community and striving to make it a better place.

I also detected differences in teaching strategies (a)implementing reflective journals as a teaching strategy, implementing Posters as a teaching strategy. I observed other differences regarding the clinical practices in some areas and the preparedness. These clinical courses were: (a) Diagnostic, (b) Oral Surgery, (c) Cariology, and (d)Dental Anatomy. Overall, the students' preparedness to practice dentistry when they graduated is achieved according to all participants (Overall, M=4.96, SD=1.07). However, the findings indicated the need to reinforce the hours dedicated to preclinical courses, improve some clinical courses, and promote competencies and clinical skills in dental education.

Differences in some elements of the problem–solving competency, critical thinking ability, and self- directed learning. One of the most significant differences among students and faculty was regarding the acquisition of some problem-solving elements –solving competency, particularly critical thing ability, and self-directed learning. Students, practicing dentists, and faculty indicated differences in some elements of these competencies. In the students' case, I observed differences between them in the elements distinguishing the difficulties in a problem and detecting strengths and weaknesses of situations concerning Critical thinking competency. Regarding Self-Directed Learning and Health Care Promotion, I found differences in implementing strategies to health promotion and prevention of oral diseases by educating individuals and communities. In the case of Professionalism, I found differences in three elements of this competency, applying ethical and legal standards in the provision of dental care, consulting with or referring to professional colleagues when indicated, and displaying professional behavior.

Difference regarding the university origin. My results indicated that within the DR, not all universities deliver the same quality education. Surprisingly, there were significant differences

between the nine schools regarding competencies and clinical skills taught differently. I detected significant differences in the acquisition of several competencies and clinical skills depending on the university in all participants. In the student's case, the university where they were attending, in the practicing dentists' case, the university where they had graduated. The university where they taught, and industry professionals, the university where their hired or supervised dentists had graduated.

These findings also enable us to gain insight into a dental curriculum's relative efficacy in producing graduates who feel competent to practice independently as general dental practitioners. Despite finding significant differences in all participants" responses, overall, there were more elements of competencies (or subdivision of competencies), clinical skills, and program components where no significant differences were found. Although some dental schools seem to have their resources limited, all dental schools produce students who feel competent. However, it places some inquiries regarding the role the university is playing in this achievement.

This research highlights the importance of addressing the persistent challenge of improving DR dental competencies by considering adding licensure requirements and dental education competencies. According to professional industry participants, there were observed differences in the dentist's performance, depending on the university from which these dentists had graduated. However, all dentists demonstrated competency achievement according to industry professionals. Nevertheless, the differences found in these scores offer additional information to dental school's directors. These findings support the necessity of reviewing the DR curriculum or further research to explore these differences.

According to my findings, not all universities' dental curricula would need to be enhanced in the same proportion in the level of preparedness, confidence, and level of agreement perceived by industry professionals regarding the practicing dentists' level of preparedness at the university attended. Finally, these findings linked student preparedness with university origin.

Differences in the teaching strategies. The survey asked students to identify if dental faculty had effectively taught them how to achieve the eight competencies investigated in this study. The competencies explored were learning to solve problems, implementing the best patient treatments, and considering alternative care options' benefits and disadvantages. Also, thinking critically, seeking solutions to cases, conducting dental research, conducting systematic reviews of the literature in any of their dental courses, and implementing best patient treatments considering the benefits and harms of alternative care options. I found differences in the students' surveys regarding these questions: a) My Professors have taught me how to think critically, b effectively) My professors' strategies to teach me included Preclinical Sessions, c) During my dental education, I attend conventions and extracurricular courses outside or inside the university, and d) my professors taught me to do posters.

Differences in teaching community service. I also observed differences in all participants regarding community service in at least one element that comprise this competency. In the faculty's case, the elements where I found differences were appreciating the influence of social, cultural, and economic forces on oral health care, Health Promotion, understanding, and cooperating with Local and Global Public Health. Also, I found differences in the faculty's responses regarding the number of experiences of community service in the dental curriculum, as well as the extracurricular experiences in community service during dental education. Regarding teaching the elements of this competency known as being engaged with the community and strive to convert it into a better place, students had to be taught by their professors with this element. Moreover, faculty reported differences in this response. However, DR dental curriculum integrates these types of practices into dental education.

Differences in the Preclinical courses. The findings related to the preclinical courses also indicated the need to reinforce the hours dedicated to preclinical courses. Students, practicing dentists, and faculty had to rate their level of agreement regarding the hours that the dental

curriculum implements in preclinical courses for dental areas, and they had to indicate if these areas were enough to teach them how to treat patients. Although, overall, all of them agreed that the dental curriculum implements these preclinical courses. The differences found in all responses, especially in the faculty responses, indicate a need to improve preclinical courses in different dental school programs. The findings related to the preclinical courses also indicated the need to reinforce the hours dedicated to preclinical courses.

According to the students, there were differences regarding preclinical courses of Operative Dentistry and Endodontics. Students also reported differences in the preclinical courses of Endodontics, Periodontics, and Oral Surgery. In the faculty's case, the preclinical courses with fewer hours were: Operative Dentistry, Dental Anesthesia, Endodontics, Oral Surgery, and Biomaterials.

Differences in the Clinical courses. The findings related to the clinical courses also indicated the need to improve some clinical courses. Differences were found in the level of preparedness in at least one element that comprise the following clinical courses among all participants: (a) Diagnostics, (b) Operative dentistry, (c) Pediatric dentistry, (e) Endodontics, (f) Prosthodontics, (g) Periodontics, (h) Oral Surgery, (i) Cariology, and (j) Public health.

My findings revealed that the clinical areas where responses showed significant differences were Endodontics, Periodontics, and Oral Surgery. Regarding the clinical area of Periodontics. According to DR faculty, they were not confident that their students could: prevent, diagnose, and manage periodontal diseases (item No.1), manage the oral health care of children and adolescents (item No. 2), manage the oral health care of adults (item No.3), and diagnose, identify, and manage pulpal and peri-radicular diseases (item No.5).

Regarding the question asked to students, my clinical practices prepared me effectively to practice. I found differences in the following questions: (a) Overall, the clinical practices prepared effectively to treat patients. (b) The clinical practices in Diagnostic prepared me effectively to

treat patients. (c) The clinical practices in Restorative Dentistry prepared me effectively to treat patients. (d)) The clinical practices in Pediatric Dentistry prepared me effectively to treat patients. (e) The clinical practices in Oral Surgery prepared me effectively to treat patients.

Regarding the clinical skills, it was possible to identify the specific clinical skills where Faculty responded that they were not confident that their students perform well. Periodontics, Pediatric Dentistry, Restorative Dentistry, and Endodontics (items 1, 2, 3, and 5 of these groups). Faculty said they were not confident that their students could: prevent, diagnose, and manage periodontal diseases (item No.1), manage the oral health care of children and adolescents (item No. 2), manage the oral health care of adults (item No.3), and diagnose, identify, and manage pulpal and peri-radicular diseases (item No.5).

Regarding Cariology and Orthodontics, precisely (item 1 of these two areas), they were not confident of preventing and controlling Dental caries. They also said they were not confident that their students could do Restorative dentistry, Preventive Dentistry, and Periodontics. DR schools of dentistry must revise these items that the dental students are not entirely achieving. However, not all universities reported the same differences.

These differences might indicate the need to reinforce the teaching of Orthodontics in the DR dental curriculum. Nonetheless, the Dominican Society of Orthodontics is emphatic regarding the practice of this clinical area in the DR, and only a certified dentist with a specialty in Orthodontics can perform orthodontics treatment to a patient. As a society, they added a mandatory requirement consisting of certification by this society. However, the competencies related to Orthodontics that were asked in this study are a part of the general skills a dentist should achieve. Thus, DR dental curriculum would need to enhance orthodontics' teaching according to the participants" similarities in their responses.

Overall findings regarding program components and acquisition of competencies and clinical skills. The findings revealed the need to promote competencies in dental education

and improve preclinical and clinical practices among the DR dental curriculum. My findings provide significant evidence that there is a need for curriculum enhancement and management in dental course material provision. The findings related to the preclinical courses also indicated the need to reinforce the hours dedicated to preclinical courses. According to the students, there were differences regarding preclinical courses of Operative Dentistry and Endodontics. Students also reported differences in the preclinical courses of Endodontics, Periodontics, and Oral Surgery. In the faculty's case, the preclinical courses with fewer hours were: Operative Dentistry, Dental Anesthesia, Endodontics, Oral Surgery, and Biomaterials. Thus, it was observed the need to improve preclinical practices among DR dental curriculum. My findings revealed that the clinical areas where responses showed significant differences were Endodontics, Periodontics, and Oral Surgery.

Regarding the clinical area of Periodontics, according to DR faculty, they were not confident that their students could: prevent, diagnose, and manage periodontal diseases (item No.1), manage the oral health care of children and adolescents (item No. 2), manage the oral health care of adults (item No.3), and diagnose, identify, and manage pulpal and peri-radicular diseases (item No.5). Thus, it was observed the necessary to improve clinical practices among DR dental curriculum. Regarding the teaching strategies, the need for improvement of specific strategies and policies regarding DR dental education would strengthen students', practicing dentists,' and faculties' confidence in some elements of the competencies and clinical skills explored and some program components' elements.

Research Question 3

My third research question asked the extent of various programs' preclinical and clinical dental program components that predicted the perceived acquired competencies and clinical skills. There were several strong predictors of competencies among all participants, students, practicing dentists, and faculty. Overall, the most robust predictors are divided by categories. I obtained

predictors that were related to the teaching strategies and the dental curriculum, also to the preclinical courses.

Predictors related to the pre-clinical courses and clinical practices. There were several strong predictors of competencies among all participants, students, practicing dentists, and faculty.

Regarding the students, the predictors for competencies acquisition were: the clinical practices of Operative Dentistry prepared effectively to treat patients. The predictors for Clinical Skills acquisition were: I currently study at, and the clinical practices in Oral Surgery prepared me effectively to treat patients and thee preclinical courses of Prosthodontics prepared me effectively to treat patients.

Regarding the practicing dentists, the predictors for competencies acquisition were: the preclinical courses of Dental Anatomy were enough to teach me how to treat patients, the preclinical courses of Pediatric Dentistry were enough to teach me how to treat patients, the preclinical courses of Endodontics were enough to teach me how to treat patients, the clinical practices of Oral Surgery were enough to teach me how to treat patients. The predictors for clinical skills acquisition were: the clinical practices of Oral Surgery were enough to teach me how to treat patients.

Regarding the faculty, the predictors for competencies acquisition were: Prosthodontics' clinical practices were enough to teach me how to treat patients. The predictors for clinical skills's acquisition were: Periodontics' clinical practices were enough to teach me how to treat patients. See Table 95 with the adjusted multiple regression model to predict dental students' competencies and clinical skills acquisition according to all participants.

Table 95

Adjusted Multiple Regression Model to Predict Dental Students' Competencies and Clinical Skills Acquisition According to all Participants

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Dev. Error	Beta	*t*	*Sig.*	Tolerance	VIF
(Constant)	2.874	.400		7.189	.000	2.874	.400
Students	.427	.075	.419	5.669	.000	.427	.075
Indicate if your level of agreement with: The clinical practices in these areas prepared effectively to treat patients **[Operative Dentistry]**							
Students Clinical Skills Acquisition							
(Constant)	13.238	8.641		1.532			
I currently study at	-2.198	.615	-.269	-3.575	.998	.998	
The clinical practices prepared me effectively [**Oral Surgery**]	5.231	1.454	.286	3.597	.895	.895	
The preclinical courses of prepared me effectively [**Prosthodontics**]	-2.932	1.188	-.196	-2.467	.895	.895	
Practicing Dentists Results							
(Constant)	.659	6.930		.095	.924		
Indicate your level of agreement with: The preclinical courses for these dental areas were enough to teach me how to treat patients **[Dental Anatomyl]**	1.526	.756	.202	2.020	.046	.950	1.053

Table 95 – Continued

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Dev. Error	Beta	*t*	*Sig.*	Tolerance	VIF
The preclinical courses for these dental areas were enough to teach me how to treat patients **[Pediatric Dentistry]**	-2.415	1.296	-.265	-1.863	.066	.473	2.116
The preclinical courses for these dental areas were enough to teach me how to treat patients **[Endodontics]**	5.520	1.687	.572	3.272	.002	.312	3.210
The clinical practices for these dental areas were enough to teach me how to treat patients **[Oral surgery]**	-3.391	1.589	-.352	-2.134	.036	.351	2.849
Practicing Dentists Clinical Skills							
(Constant)	1.581	.513		3.083	.003		
The clinical practices prepared me effectively **[Oral Surgery]**	.555	.096	.512	5.773	.000	1.000	1.000
Faculty Competencies							
(Constant)	1.375	.529		2.599	.010		
The Clinical practices of **Prosthodontics** Prepared me effectively to treat patients	.561	.097	.429	5.778	.000	1.000	1.000
Faculty Clinical Skills							
(Constant)	2.093	.457		4.577	.000		
The clinical practices prepared me effectively **[Periodontics]**	.448	.086	.396	5.224	.000	1.000	1.000

*Note:*Multiple Regression Model to Predict Dental Students' Competencies and Clinical Skills Acquisition According to all Participants

Finally, the findings revealed that in the student's results, the university attended was a predictor for competency achievement. Thus, it is important to assess the university's role in the student's acquisition of competencies and clinical skills.

Research Questions Connection to Related Literature

This section aims to put this study's impacts in context with prior connected literature. My study's findings are consistent in several ways with some other literature existing and understanding dental curriculum and dental competencies particularities. My findings are consistent with the literature in many areas and contrast and add to the research regarding the acquisition of dental competencies, dental clinical skills collected works, and program components that are part of dental education. To better explain this section, I provide a Table (No. 6) with the research questions and the literature that grounds and that contrast with these findings.

Table 96 offers a comparison between findings of previous research and those found within this study. While there are many areas of affirmation, differences are pointed out as well.

Table 96

Comparison Summary of Reyes Study and Prior Research Findings

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
Similar agreement level among the four stakeholder groups regarding dental students' preparedness to practice dentistry effectively.	Affirms students in the last year of dental education are agreed regarding the acquisition of competencies. However, some practical and theoretical subjects must be improved (Chouchene et al., 2020; Geng et al., 2018; Ozdemir-Ozenen et al., 2020; Tanalp, Güven, & Oktay,2013; Sanz, & Meyle, 2010; Schönwetter et al. 2011).	Less than 40% of the participants believed that dental graduates acquire the most required dentistry competencies during the current educational program. Also, the non-clinical part of the curriculum was the area that should be emphasized. (Fazel et al., 2013)
Overall, all participants are agreed that DR dental students acquire the competencies and clinical skills to practice dentistry. Also, they agree that the program components help the students in this acquisition. However, there are differences found in some elements of the competencies, the clinical skills, and in some program components.	Affirms dental graduates answered that they acquired competencies in the clinical setting development, then in the classroom, and finally externship contexts. Also, each competency and its elements were emphasized by these graduates. (Chouchene et al., 2020; Ozdemir-Ozenen et al., 2020; Schönwetter et al.2011),	Becoming a competent practitioner is a complex process. Dentists are required to study in a competency-based education approach, with a student centered-learning, with the curriculum components and content molded by societal needs, with time-based training and numerical targets (Chuenjitwongsa, & Bullock, 2018).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
Students, practicing dentists, and faculty demonstrated a significant agreement regarding the program components and how those components helped students acquire competencies and clinical skills.	Proposed a competency model for dentists in China to lead the progress, admission, preparation, and dentists' assessment. The competency model adapted to dentists' characteristics and quality requirements in China have a robust scientific foundation. Also included: clinical skills and medical services, disease prevention and health promotion, interpersonal and communication skills, professionalism, medical knowledge, and other competencies such as lifelong learning, teamwork ability, and research ability. Dental graduates need to demonstrate a variety of acquired learning outcomes. For this, they need to receive instruction through diverse teaching methods (Geng et al., 2018; Sanz & Meyle, 2010).	Students show less confidence in more challenging aspects of dentistry. There are significant differences in the perceived understanding and importance placed on competencies and their effect on dental education among faculties. During the second year of dental education, the EBD skill acquisition shows that D2 students are minimally executed as advanced beginners at the end of their D2 year. There were significant differences among students and faculty regarding the skills required for the clinical dental practice, in the value of a critical appreciation of evidence-based practice as one of the skills that dental students need to acquire (Gerzina, McLean, & Fairley, 2005; Güven, & Oktay, 2013; Licari, & Chambers, 2008; Marshall et al., 2018).
The agreement about the acquisition of competencies and clinical skills in Dentistry	Affirms that recent graduates reported most confidence in areas of necessary clinical procedures (Schönwetter et al., 2011).	

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
varied across the three stakeholder groups. There was less agreement between students and faculty from the different dentistry schools regarding competencies and clinical skills achieved. These findings strengthen the importance of reinforcing all competencies elements. Practicing dentists feel more confident that they acquire competencies and clinical skills to practice dentistry. Differences regarding the level of preparedness in Dentistry		
Regarding the level of preparedness to practice dentistry, there were differences in these scores, as perceived by three stakeholder groups (students, practicing dentists, and faculty).	The differences in preparedness found in preclinical and clinical student, in this study, is a result of numerous and overlapping learning variables.	Dental students should be exposed to qualified specialists in various dental fields because it aids students to appreciate the limits of their abilities and the situations where referral to a specialist is required (Holbrook et al., 2008; Zheng, Bender & Nadershahi, 2017).
	The variables are including curriculum structure and content, as well as organizational difficulties,	A practical teaching method helped students acquire the required competencies more than a traditional

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
	including the structure of classes with many students in the classroom, or the teaching methods applied, or financial difficulties (Serrano et al., 2018).	teaching method. Also, students in traditional methods considered themselves to be significantly more competent in treating patients for removable partial and fixed prostheses than students in a PBL method (Montero et al., 2018).
Differences in Faculty Responses Although Faculty, overall said students achieved these competencies, when each element is examined independently, there are significant differences in the scores given by each of the groups of faculties of different universities participating in this study.	Affirms modern dental education needs faculty with a passion for teaching, not a teacher that only wants a job (Asare, 2008)	Dental faculty should participate in Faculty development programs permanently. Faculty must be engaged in sustained learning to impact their learning and teaching behavior (Holbrook et al., 2008; Zheng, Bender & Nadershahi, 2017).
Difference regarding the university origin. There were significant differences depending on the university the students attended, in the practicing dentists' case, the university where they had graduated. In the faculty, the university where they taught, and industry professionals, the university where their hired or supervised dentists had graduated.	Affirms that dental students from seven different dentistry schools reported confidence regarding dental education but identified several problematic areas, including fundamental dental instruction aspects. The study concludes that results can be used to enhance the dental curriculum and the overall dental education experience (Henzi et al., 2007)	The university curriculum is an essential element that influences oral health development in dental students. Also, a discipline-based curriculum approach uses many students in classroom settings, lectures, and classical instruction and clinical exposure methods. These educational strategies are mostly oriented to the curriculum and rarely integrate the student's involvement. The disciple-based- approach curriculum has been the approach implemented in the

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
		last decades by dental schools in Egypt. In addition, university and dental school authorities should recognize that the mouth is part of the human body and that dentistry and medicine should be integrated into dental education and need to be part of other healthcare disciplines (Abdelaziz et al., 2018; Bourgeois et al., 2018; Holbrook et al., 2008; Neville et al., 2019).
Differences regarding the acquisition of specific competenciesEBD. Dentists must demonstrate contemporary knowledge and understanding of the dental practice's broader issues, which indicates that they should handle the evidence-based dentistry concepts. However, at least one element of the EBD competency was not achieved according to both students and faculty. These differences were also observed in the clinical skills responses.	Affirms graduates were confident in some clinical areas, and less confident in scientific research, among other areas, overall, they feel competent to practice dentistry (Chouchene et al., 2020)	Arguments that learning through an evidence-based approach is vital for dental students. Dentists must also be conscious of the scientific basis that supports the treatment they provide. Also, the evaluation process, which supports treatment planning, requires dentists to pay attention and record patients" pertinent information efficiently. Also, dentists need to understand the patients" social, cultural, and linguistic needs. Thus, they need to achieve cultural competencies, resulting in a practitioner who can develop the treatment plan for patient-centered care (Field et al., 2017).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
Differences in some elements of Competencies. Critical Thinking, Self Directed Learning and Helth Promotion, Professionalism	Affirms the future dental curriculum should be based on competencies to be achieved rather than the processes used to achieve them. It should also include self-directed learning programmers for students, small groups, and personal freedom for teaching and learning. These are excellent methods for an effective learning and teaching process (Reynolds et al., 2008).	Argues that dental education should emphasize oral examination and highlight the need for further students' practical preparation. Also, professionalism should be introduced at the early stages of the dental curriculum (Masella, 2007; McLoughlin et al., 2017)
Differences in some elements of Clinical Areas: Endodontics, Periodontics, and Oral Surgery. The clinical areas where responses showed significant differences were Endodontics, Periodontics, and Oral Surgery.	Affirms that dentists need to ensure that they can provide care to their patients effectively and know how to manage the dental team. Dental service should be provided through an EBD approach (Field et al., 2017).	Arguments that the essential competencies required by dental students before graduation in Taiwan are: operational and nonoperational. The nonoperational were responding to the patient's questions, treatment planning, and dealing with medically compromised patients. The operational competencies were related to Operative dentistry (cavity filling), infection control, and handling needles adequately (Hsu et al., 2015)
Differences in Faculty responses regarding the acquisition of Periodontics Orthodontics, Endodontics. According to DR faculty, they were not confident	Students felt most confident about performing the periodontal treatment and least confident about providing orthodontic care. Also, the fourth-year students were more confident in all the competencies than the third-year students (Ihm, &	The European Federation of Periodontology (EFP) and ADEE in 2009, at La Granja de San Ildefonso, reviewed the competencies and learning outcomes for dental European dental graduates regarding periodontology or Periodontics in Segovia, Spain.

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
that their students had acquired some elements of periodontics, such as a) prevent, diagnose and manage periodontal diseases, b) manage the oral health care of children and adolescents, c) manage the oral health care of adults, d) and diagnose, identify and manage pulpal and peri-radicular diseases.	Seo, 2016)	They have stated that the approach should be student-centered because s enables the acquisition of critical thinking skills. Promoting hypothesis generation and problem-solving abilities helps students pursue active and deep learning and lead to continuing professional growth. They recommend the implementation of technology in dental education. Nevertheless, in teaching cephalometry in orthodontics, blended learning produced better learning outcomes associated with using a traditional teaching method only. (Gürsoy et al., 2018; Ludwig et al., 2016; Nagendrababu et al., 2019).
Research in Dental Education.		
There were significant differences in dental research implemented in dental education between the three stakeholder groups, students, practicing dentists, and faculty. According to faculty responses, the areas related to integrating research into their teaching activities where I found differences were conducting research, doing systematic reviews of the literature in any of their dental courses and	Dental education is closely connected to research in the oral health disciplines, so they frequently serve as centers for epidemiological research and research into treatment outcomes in the communities they functioned (Kerosuo, Ruotoistenmäki & Murtomaa, 2001).	Dental school faculty should be involved in research activities, teaching, clinical work and regularly administration. Research is a significant incentive to better teaching and better clinical care (Holbrook et al.,2008).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
teaching their students to implement best patient treatments considering benefits and harms of alternative care options.		
Differences in the Preclinical Courses. The findings related to the preclinical courses indicated the need to reinforce the hours dedicated to preclinical courses,	Affirms that preclinical students that are exposed to a high fidelity simulated urgent care patient scenario will develop critical thinking and instinctive dental treatment skills that will enable them for actual urgent dental care (UDC) treatment in the clinical setting. It is important to provide a successful preclinical–clinical transition. (Drahos, 2017; Mekhemar, et al., 2021)).	The use of simulation in dental education is not new. Haptic devices can be used to simulate traditionally taught dental skills. The integration of technology into dental education includes measuring students' 3D perceptions, levels of involvement in the virtual environment, development of clinical notions and skills, human-computer relations, the influence of the situational context, and the institutionalization of TEL into dental education curricula (Eaton et al., 2008)
Differences in Some Elements of a Problem – Solving Competency, Critical Thing Ability, and Self- Directed Learning **One of the most significant differences that were found among students and faculty was regarding the acquisition of some elements of a problem –solving competency, critical thing ability, and self- directed learning.**	There are unknown case situations that are explicit to contextualizing urgent dental care treatment in a preclinical scenery containing diagnosis, critical thinking material selection, patient record management, oral pathology, and time administration (Drahos, 2017).	ADEA Commission on Change and Innovation in Dental Education (2006) arguments that the strategies used to develop critical thinking and self-directed learning, are similar. These findings reinforce the need to incorporate several strategies to achieve dental students to fully acquire these competencies. For example, the ADEA Commission on Change and Innovation in Dental Education (2006) suggested providing students with

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
Students, practicing dentists, and faculty indicated differences in some elements of these competencies, practicing dentists and students rated themselves higher than faculty.		repeated opportunities to use the reflective conclusions process to analyze problems by fostering case scenarios during dental education as an excellent strategy to promote these competencies. There is evidence that students who regularly explore problems develop more sophisticated SDL than students do in traditional curriculum lecture based (ADEA Commission on Change and Innovation in Dental Education, 2006). A reflective judgment process, along with an emphasis placed on the literature's student-directed investigation, represents the core elements of PBL (ADEA Commission on Change and Innovation in Dental Education, 2006).
Differences in Teaching Community Service **I also observed differences in faculties' surveys regarding teaching their student to be engaged with the community and strive to convert it into a better place, although, DR dental curriculum integrates these types of practices into dental education**.	Affirms several outreach instruction models adopted by specific dental schools and identified two models. The first is community dental clinics providing a clinical teaching setting for students (Elkind, 2002). This teaching aims to deliver the experience of treating patients in a primary care setting, promoting teamwork, and maturing an	Affirms that dental students need community based-dental education (CBDE). To learn in these types of practices, dental students need preparatory education in cultural consciousness, communication and interpersonal skills, and the social and behavioral sciences. The effective integration of CBDE into a dental curriculum requires reflective mechanisms, evaluation, and highly planned community-based

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
	understanding of the broader context in which dentistry is accomplished. The second is grounded on community-based services where students contact the public, patients, and other health professionals and observe dental care. It is acknowledged that such experiences outside the dental hospital's secondary care environment are essential to future dentists since most of them will eventually work in the primary care sector. By knowing the importance of including these types of dental education strategies, several dental schools have developed courses that take their students into community settings to achieve these competencies (Elkind, 2002).	experiences. Also, distinguish the importance of promoting cultural competencies and social responsibility in dental students to build their minds and attitudes as modern dentists, which educators distinguish as relevant. The incorporation of service-learning into dental and dental hygiene program structure will nurture graduates to be better prepared to work successfully among diverse populations (Rubin, 2004; Strauss, Stein, Edwards, & Nies, 2010; Yoder, 2006).
Overall Findings Regarding Program Components and Acquisition of Competencies. The findings revealed the need promote the acquisition of competencies in dental education.	Correct health behavior is an essential component for preventing diseases in dentistry, oral public health, and other medical fields. Also, implementing the California Critical Thinking Skills Test (CCTST) is a good predictor	Teaching basic pharmacology in a multidisciplinary setting did not unfavorably affect dental students' inspection performances. Also, the clinical education of dental students may be carried out in community clinics. Ethics, principles, and professionalism are best measured in settings comparable to real-world

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
	of student performance on high-stakes, and can be suitable in examinations and may be useful for student selection and retention (Graham, Zubiaurre & Anderson, 2013; Menegaz, Silva & Cascaes, 2018).	practices (Barry, & O'Sullivan, 2017; Christie, Bowen & Paarmann, 2007; Elkind et al., 2005)
Predictors Related to the Preclinical and the Clinical Courses	Establishing an appropriate approach for the measurement of competence permits careful attention. Having a broad experience does not lead persons to become experts. Students need to receive feedback from both patients and faculty (Dawson et al., 2017; Chambers, 2001 Nicol & Macfarlane, 2006).	The traditional method for determining the acquisition of the required competencies in dental students before graduation measures experience by counting the number and the quality of procedures accomplished. However, it requires the daily incorporation of all information and evidence to demonstrate that the student has acquired the needed competencies in dentistry. Also, innate psychomotor ability and motivation showed to be useful as specific predictors of future performance by individuals. (Dawson et al., 2017; Suksudaj et al., 2012).
There were also predictors related to some of the clinical areas. There were several strong predictors of	During dental education, students need to be exposed to different settings, such as real-world patient encounters in various contexts, and articulated exposures to theoretical and simulated	Manual and spatial abilities are related to the acquisition of dental skills in students in preclinical dental education courses, indicating that these skills should be considered as admissions criteria to dental

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
competencies among all participants, students, practicing dentists, and faculty. **Students Results** Regarding the students, the predictors for competencies acquisition were the clinical practices of Operative Dentistry prepared effectively to treat patients. The predictors for Clinical Skills acquisition were I currently study at, and the clinical practices in Oral Surgery prepared me effectively to treat patients and thee preclinical courses of Prosthodontics prepared me effectively to treat patients. **Practicing Dentists Results** Regarding the practicing dentists, the predictors for competencies acquisition were: the preclinical courses of Dental Anatomy were enough to teach me how to treat patients, the preclinical courses of Pediatric Dentistry were enough to teach me how to treat patients, the preclinical courses of Endodontics were enough to teach me how to treat patients, the clinical practices of Oral Surgery were enough to teach	situations. Students need to learn to make critical clinical decisions (Dawson et al., 2017; Chambers, 2001 Nicol & Macfarlane, 2006).	programs, along with cognitive measures (Schwibbe et al., 2016). However, the practice appears to significantly refine the manual ability of students and reduce the impact of innate skills over time (Polyzois et al., 2011). A study showed a considerable improvement in the students' execution after the end of traditional training. Thus, this improvement indicates the necessity of enhancing clinical and preclinical practices as the clinical skills scenario is developed and achieved (Polyzois, et al., 2011) Also, the complexity of the processes to acquire the skills needed for practicing dentistry indicates special

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
me how to treat patients. The predictors for clinical skills acquisition were the clinical practices of Oral Surgery were enough to teach me how to treat patients. **Faculty Results** Regarding the faculty, the predictors for competencies acquisition were: Prosthodontics' clinical practices were enough to teach me how to treat patients. The predictors for clinical skills' acquisition were: Periodontics' clinical practices were enough to teach me how to treat patients.		attention in dental students' preclinical cycle and clinical practice. It is known that the majority of students can grasp the manual dexterity skills needed for dentistry and as students make progress in their training over their dental education, their performance improves (Gansky, et al., 2004; Gray & Deem,

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
		Predictors Related to the Instruction of Competencies **1-Critical thinking** was moderately correlated with healthcare students' academic success (Ross et al., 2013). **2-Implementing a Competency-based education** approach allows students to achieve higher scores in prosthodontics than traditional education (Alkhodary, Farah, & Ghobashy, 2020; Rafeek, Marchan, Naidu, & Carrotte, 2004). **3- The achievement of Reflection.** In a study conducted at the International Dental Program (IDP) at Loma Linda University, 171 students trained in countries outside the United States were evaluated. The results indicated that when students are exposed to the interaction of persons involved in the health promotion project, such as peers, supervisors, target populations of local organizations, they can triangulate personal thoughts, and principles, and ideas achieving the process of Reflection in them (Eva & Regehr, 2005).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
		4-Community-based dental education (CBDE) improves students' values and behaviors towards health care access for underserved populations and attracts diverse students to dental education. CBD also provides dentistry with a chance to guide dental faculty and dental students' values in the direction of public service, ethics, and the public's health (Straus et al., 2010). **5- National Board Part II and dexterity procedures.** Results of multiple regression analyses recognized National Board Part II and dexterity procedures as significant predictors of academic performance and clinical competency (Stacey& Whittaker, 2005). **6. Shadowing Experiences.** Having shadowing experiences during dental education increase student's knowledge and increase student's motivation because they can see other professors as role models and improve communication and social skills in them (Heitkamp et al., 2018).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
		7. Implementing Porfolios. Implementing portfolios as a teaching strategy in dental education stimulates reflection (Koole et al., 2013) **8. Self -Reflection.** In the courses of social dentistry, implementing reflection in learning was a significant predictor for health promotion and community work competence in the context of portfolio-based education in an undergraduate dental program (Koole et al., 2013). **9. The quality of doctor-patient communication could be enriched by specific instruction (Haak et al., 2008).** Educators and researchers in health professions such as medicine, dentistry, and nursing have correlated emotional intelligence as an essential factor in a student selection to enter health programs, and a predictor of clinician performance and patient outcome (Victoroff & Boyatzis, 2013).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
		10. Gender and ethnicity were biases in the demonstration of acquisition of clinical competencies. Also, female medical students in a OSCE evaluation, performed better than males (Schoonhei-Klein et al., 2006). Affirmed students' performance was predicted by gender, e.g., females performed better than men. Also, time elapsed between completion of high school and dental school admission. Students with less time between finishing high school and admission to a dental school, performed better. Also, students that obtained a better rank in admission test, students with class attendance rate higher, and the students" workload hours in teaching, research and extension performed better. The R values obtained were: (R2=0.491). Findings give evidence about predictors of undergraduate students' performance and reinforce the need for curricular reformulation to improve integration among courses (Silva et al., 2010).

Table 96 – Continued

Reyes (2021) Key Findings	Prior Research Findings	Prior Research that Contrast
		11- Technical Skills. The models based on technical skills rather than clinical judgment and patient management, as well as the combination of these two models, can serve as predictors of graduation competency in dental education, better than do ratings in the disciplines being predicted (Chambers, 2001).

Note: Summary of Reyes Study 2021 and Prior Research Findings

Connection to Related Literature

The findings of my study are consistent with some literature, different from others, and expand the understanding of dental students' acquisition of competencies and clinical skills. My findings are consistent with the literature in several ways.

Studies on the competency categories. My results are consistent with some other studies on the competency categories where students rated themselves higher and lower. Some authors had indicated that in the absence of homogenous objective tests of competency, and for the full range of core items widely accepted as indispensable, if stakeholders indicate differences in self-perceived competency tests, as was the case of my surveys, this is an early indicator of the need for curriculum revision (Greenwood, Townsend, Wetherell, & Mullins, 1999). Thus, using self-perceived competency surveys deliver to the researcher some means of comparing student's competency achievement or not, feelings of confidence, or lack of it (Greenwood et al., 1999). Moreover, it may well be interpreted in practice, to readiness or un-readiness to perform various dental services, and in many situations, if students lack confidence in any item, as indicators that provides an early warning to educators that something is wrong in their curriculum (Greenwood et al., 1999). Thus, the fact that there were found significant differences in all stakeholder groups, students, practicing dentists, faculty, and industry professionals' surveys can be considered as an indicator of the need for curriculum revision.

Input from the Industry Professionals perspective. This research provides DR dental school directors some input from the industry professionals" perspective. The acquisition of such competencies and the labor market's input is vital in ensuring that curricula are relevant and up to date to allow dental students to meet these expectations. According to Jackson (2004), they play a vital role for ensuring dental students employability skills are connected to essential industry standards. Building a curriculum without acceptable input from industry leaders and international

scenarios means that there is the potential for deficiencies in students' abilities and risking patient safety. Also, DR's dental students may not be accepted in international scenarios and marketability upon graduation.

One of the dentist's primary goals after graduating from a dental school is to set a profitable dental practice (Journal of the American Dental Association, 2011). For many dentists, this is an indicator of success (Journal of the American Dental Association, 2011). Nevertheless, in the DR, it is common that recent graduates get a job in either the private or public sector. Many dentists, or their parents, after finishing dental education had acquired high debts and cannot afford to set a dental practice. So, these recent dental graduates need to go to work for someone else. Others get a job in the public sector as a way to receive a fixed salary. Others work in dental centers dedicated to accepting insurance patients where they can see a high volume of patients; this allows them to acquire some experience before settling a practice, or before beginning continuing education. This reality differs from other countries such as the US. According to the Journal of the American Dental Association (2011) in their editorial, they said that dentistry was different from most health professions because dentists work alone or with only a few colleagues in practice. This editorial explained that infrequently a dentist work assessed by someone other than himself or herself. However, there are some DR dental graduates, working by someone. In my opinion, this fact is only a reflex of an economic situation, where it is expensive for a young dentist to afford to settle a private practice in one hand. On the other hand, it is not common to stay as general dentists in the DR. So, many recent dentists prefer to work by someone to gain experience, while they wait to be accepted in a specialization program within the DR or outside the country.

Dental Curriculum. Some authors had indicated that sometimes the dental curriculum is not oriented adequately to prepare dental students (Chouchene et al., 2020). For example, in Tunisia, the dental school curriculum is based on individual disciplines and centered on integrated

patient care (Chouchene et al., 2020). Similarly, DR dental curriculum is skilled-based more than a competency-based curriculum (Thomas 2006). There are no dental competencies in the DR to be achieved as a requirement to graduate as dentists. All these facts might be affecting the preparedness of DR dental students. According to Chouchene et al. (2020), a curriculum fundamentally based on individual disciplines is questioned. However, there is a lack of congruency of different curriculum approaches necessary for a globalized world (Donaldson et al., 2008).

Nevertheless, CODA recommended integrating a CBE curriculum as its preferred curricular approach for helping dental students acquire required competencies (Haden et al., 2006). It is known that not all dental schools incorporate CBE education as their curriculum approach (Haden et al., 2006). Furthermore, not all countries have a set of competencies taught within their university dental schools (Englander et al., 2013; Haden et al., 2006). In the US, the ADEA (2017) and the ADA (2011) proposed dental graduates' competencies as an essential guide for dental schools. However, no such set of national Dominican dental competencies exist to guide the work of the dental schools in the DR. Thus, based on my results and considering Chouchene et al. (2020) suggestions, and ADA and ADEA suggestions. These findings were evidenced by the necessity of enhancing the dental curriculum and the addition of dental competencies to improve the quality of dental education within the DR.

Role of a dental Faculty in the acquisition of competencies. According to Asare (2008), a dental school's essential resource is its faculty. “Dental graduates” adequate preparedness to face contemporary society is connected to a well-prepared faculty (Asare, 2008). Although dental faculty may not need to be competent in every aspect of teaching, they must become competent in areas involving their specific role (Chuenjitwongsa et al., 2018). Thus, the lack of faculty competencies raises a question regarding the core competency requirements for being a competent

dental faculty (Chuenjitwongsa et al., 2018). However, there is not much data regarding this situation (Chuenjitwongsa et al., 2018).

According to Holbrook et al. (2008), research is an essential incentive for better teaching and better clinical care. It is acknowledged that the dental faculty's role should play as actives in research, teaching, clinical work, and frequent management (Holbrook et al., (2008). Although it is recognized that it is a challenge to maintain a balance between the obligations to clinical care, teaching, and research, it also takes account of underserved areas in each of these categories (Holbrook et al., 2008). They recognized that it must be met to a high degree in an active and successful modern dental school (Holbrook et al., 2008).

Faculty and academic career. In the study conducted by Thomas (2016) in the schools of dentistry in Santo Domingo, results were similar, and four years ago, dental faculty answered to have more that one job, 68% answered affirmatively, and only 32% answered negatively (Thomas, 2016). Also, the study conducted by Thomas (2016), revealed that 11% of teachers earned less than 5,000.00 pesos considered a meager salary, 55% earn between RD $ 5,000.00 to RD $ 20,000.00, pesos being considered a low wage to win as a university teacher. 1% of teachers received a salary between $ 20,000.00 and $ 30,000.00 considered as an average salary, 23% of the teachers in this study earned between RD $ 40.00 to RD $ 60,000.00, this being a good salary. However, only 9% of teachers earned RD $ 60,000.00 to 80,0000.00, an excellent salary. On the other hand, higher wages obtained a deficient percentage, 10% made between RD $ 40,001.00 and RD $ 60,000.00, and only 10% earned around RD $ 60,001.00 and RD $ 80,000.00. These results were obtained four years ago. It has to be noted that currently, one Dominican peso is equivalent to 58 dollars. The low salary that DR dental faculty earns may be one of the causes there are few full-time professors and the reason they share dental practice with teaching. However, in a study conducted by Schenkein and Best (2001) regarding factors considered by

new dental faculty to choose an academic career, results indicated that disproportions in the income of dental faculty compared to private practitioners and student debt are essential concerns in choosing academic careers. So, it seems that in the US, dentists prefer to practice rather than choosing an academic career for economic matters too. However, this study indicated that many dentists also like to teach and participate in educational activities, which are significant attractions in choosing academic careers by them (Schenkein & Best, 2001). (Figure 2 shows a contrast of similar mean income trends of careers in private practice and academia, 1990-2003 (ADEA).

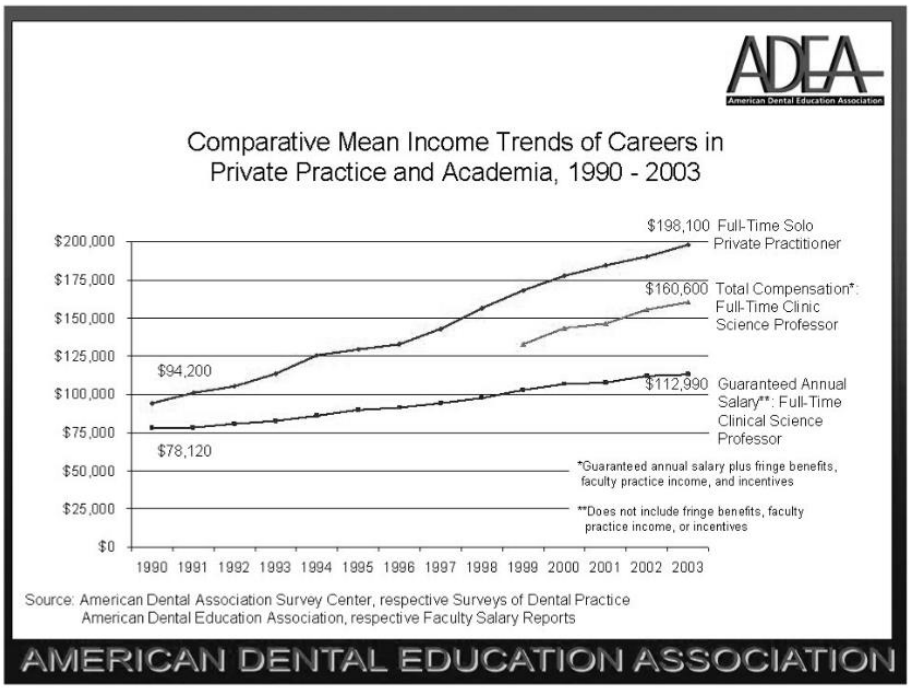

Figure 4. Comparative mean income trends of careers in private practice and academia, 1990-2003 (ADEA). Retrieved from: Asare, (2008). A few good faculty. New York State Dental Journal, 74(3), 23-7.

Regarding faculty retention, universities and colleges identified that it depends on a significant transition of academics into their roles and responsibilities (Licari, 2007). However, professional schools infrequently prepare potential academic faculty for these responsibilities

(Licari, 2007). Besides, the literature indicates that there is a necessity of prepared dental faculty. That dental schools and universities need to offer learning experiences that strengthen the teaching of their faculties and identify the scholarship and leadership skills needs of their allied dental faculty (Licari, 2007). Additionally, it was suggested that dental schools might offer a program track dedicated to their prospective allied dental faculty and offer them diverse opportunities that develop their teaching, scholarship opportunities to enhance their professional development, and mentoring skills before graduation (Licari, 2007). However, Haden, Weaver, and Valachovic (2002) found that one measure implemented by dental schools to reduce faculty shortages was utilizing part-time faculty, reorganizing teaching loads, distributing duties, and providing interdisciplinary coverage, including the use of general dentists to teach in specialty areas. In that sense, my findings differ with the study conducted by Haden, Weaver, and Valachovic (2002).

Contrast with other studies. My study also contrasts with other studies regarding the acquisition of dental competencies and dental clinical skills. In a study conducted by Fazel et al. (2013), in Iran, regarding the "Dentists' Perspective on Achievement of Essential Competencies through National Curriculum". Participants were requested to specify their opinion regarding the 142 stated competencies for an Iranian general dentist and the degree to which they believed the current dental curriculum covered each competency. Results of 250 questionnaires (83%), of 300 that were sent, were returned. These findings revealed that although most of the participants considered the competencies are necessary for Iranian dentists, less than 40% of the participants believed that the Iranian dental graduates acquire the dentist's essential competencies during the current educational program. These results contrast with my findings because in my study, overall, all participants are agreed that DR dental students acquire the competencies and clinical skills to practice dentistry. Also, they agree that the program components help the students in this

acquisition. However, according to Fazel et al. (2013), there was a necessity for curriculum revision, emphasizing clinical skills on the non-clinical part of the curriculum. In this conclusion, this study has similar conclusions as my study.

Implications for Practice and Leadership Recommendations

In this section, I provide recommendations for both policy/practice and future research that emerge from the study. I make this proposal based on my knowledge in higher education, dental education, dental curriculum, and dental competencies knowledge. I also ground my recommendations based on 27 years as DR dental faculty, both undergraduate and postgraduate dental programs, as a former dentist and oral and maxillofacial surgeon currently practicing, having more than ten years, as Associate Director of a DR school of Dentistry, with 13 years in administrative affairs, and my experience as part of the National Committee of Qualification of DR Health Care Professions. All of this enables me to understand the DR context and the outcomes of this study. Each step in these recommendations highlight the importance of focusing on strategies to improve dental education and understanding the importance of creating policies for quality assurance.

Overall Initiatives

Overall, I propose incorporating national competencies for the dental practice, adding licensure requirements and policies for the dental practice These policies will have to be addressed collectively by the COD president, the MESCyT, and the Ministry of Public Health, the different universities teaching Dentistry in the DR, and the dental school directors. Although further investigation is required, the differences found in the stakeholder participants depending on the university make me recommend the need to standardize dental education and include national policies to be applied to all dental schools within the DR.

Also, I suggest creating a National Advisory Board for Dental Education, which might be composed of individuals with expertise, known ethics, and commitment to quality assurance. This body would advise on creating licensure standards and the competencies that should be taught in preclinical and clinical dental education. Besides, I recommend creating a Board of Advisors at every dental school. This Board would provide feedback to school leaders on the needs of the industry, the competencies seen in recent graduates, and the skills and knowledge needed to meet the changing profession. Such an advisory board can advise schools on the overall mission of quality assurance, creating policies, and assuring excellence in clinical work, research activities, curriculum effectiveness, infrastructure, alumni relations, and public relations. It will have to be composed of individuals with commitment, expertise, and representatives of the industry sector.

It would be interesting to include course material, improve specific teaching strategies, and create policies to assure quality education. Preclinical courses and clinical courses are vital for competency attainment. It is known that the process of introducing any change will have its repercussions on the stakeholders, mainly those involved in education development, including the institution, faculty, students, and committees of teaching/training, dental coordinators, curriculum, and assessment. (Lagali-Jirge, 2015). Although my findings indicate that industry professionals rate dentists as prepared, I inspected the significant differences between all stakeholder groups (students, practicing dentists, faculty, and industry professionals). The university attended showed some sharp fluctuations in opinions, especially from both faculty and industry professionals. Faculty teaching different schools reported significant differences in student outcomes. Such differences were in particular in critical thinking, problem-solving, SDL, integrating EBD, establishment, and maintenance of oral health, professionalism, patient care, control patients" pain and anxiety, conducting dental research, and community service, primarily being engaged in the community and strive to convert into a better place. Based on these differences and my own

professional experiences, I recommend that dental school directors and faculty have significant discussions with the industry regarding curriculum. A national advisory and school advisory structure would facilitate this discussion.

It is vital to understand the faculty role as guides of the instruction in competency attainment. However, faculty roles and responsibilities are not commonly understood, and this lack of understanding of their roles and competencies has led to underinvestment in dental faculty development (Chuenjitwongsa et al., 2018). Some authors have mentioned the roles and competencies of dental educators. These roles include four areas: (a) teaching, (b) conducting research, (c) administration, and (d) delivering healthcare. Despite four roles, dental faculty may not be fully engaged in every role, and they should dedicate themselves to relevant tasks of their work contexts (Chuenjitwongsa et al., 2018).). My findings indicated that, although faculty report implementing diverse teaching strategies, they do not incorporate them in the same proportion. I found significant differences regarding faculty teaching strategies among students, practicing dentists, and faculty.

Dentistry requires reflective general practitioners (Boyd, 2008). They are developing critical thinking skills that require trained faculty. Reflection on practice is essential to allow students to learn through a logical process about their experiences (Boyd, 2008). Dental students must learn new ways of thinking, and dental educators' roles guide the students in this achievement (Boyd, 2008; Merriam & Caffarella, 1999). Also, students need time in the dental curriculum to reflect on becoming competent and achieve a reflective practice (ADEA Commission on Change and Innovation in Dental Education, 2006). Hence, I recommend that school directors work closely with their faculties and communicate this vision (Senge, 2006). However, it is essential to consider how complicated the DR system of education is and how sensitive it might be for senior faculty to accept new scenarios to act. One recommendation is to

demonstrate personal mastery and be aware of the current organizational culture (Senge, 2006; Morgan, 2006).

Additionally, one fact that must be considered is that maybe school directors will have to negotiate with faculty aligning internal activities with outside forces and opportunities, knowing that change needs adjustments. In the short term, it generates disorientation and resistance (Bolman & Deal; Bridges, 2009). Thus, to achieve empowered faculties, it will be necessary to understand the roles of dental educators.

In my experience, I have seen that DR dental school directors are more worried about hiring competent clinicians, and they do not emphasize the importance of having faculty more empowered and occupying different roles within their dental schools. Thus, new hiring policies or priorities may be needed to improve quality teaching. However, I suggest further investigation to address this situation. Nevertheless, I provide a recommendation regarding dental faculty roles and responsibilities.

My findings revealed that 100% of faculty who participated in this study had postgraduate education, mostly dental specialties. Although they are prepared with a dental specialty, which makes them more qualified for dental instruction, there are few full-time professors, only 21 (14%); most of them share teaching with practice, 129 participants (84%) practice and teach dentistry. Many teach in more than one dental school, which might be one of the causes affecting DR dental students' level of preparedness. These results also indicate the DR dental curriculum places on acquiring clinical skills rather than emphasizing the acquisition of other competencies necessary for undertaking a quality dental practice. There must be a balance between faculties roles and responsibilities within a dental school (Chuenjitwongsa et al., 2018). This balance was not found in DR dental schools. Regardless of the context, the literature recommends that an indispensable element of any dental instructor's role contributes to instruction (Chuenjitwongsa et

al., 2018). I believe that a divided dental faculty with both practice and teaching and, in some cases teaching in different universities is one of the main reasons the students' acquisition of competencies is affected. Dental professors are responsible for ensuring that students are prepared to treat patients effectively. According to my findings, faculty rated students with low scores (M=2). Thus, these findings revealed the necessity of developing plans that increase the professors' sense of belonging and improve quality teaching.

However, there is evidence that low salaries are another reason for faculty sharing practice and teaching (Schengen & Best, 2001; Thomas, 2016). Indeed, the low salary earned by DR dental faculty is one of the reasons that there are few full-time professors (Thomas, 2016). However, some have said that the disproportions in dental faculty income and what they earn as private dental practitioners and the debts they acquired during dental education are most of the essential concerns to choose academic careers (Schengen & Best, 2001). Based on this, I recommend empowering faculty by creating committees and assigning responsibilities with compensations for the time employee, fostering a positive environment, and faculty with more sense of belonging (Bolman & Deal, 2013; Herzberg, 1968).

I recommend that dental schools make a detailed diagnosis of dental students attending their final cycle and include recent dental graduates, faculty, and industry professionals to inspect their competency level with an internationally validated instrument such as my survey instruments validated for the DR context. It will be an assessment similar to the one used in this study about dental students' acquisition of competencies in the DR and should include the same stakeholders.

Suggestions for Future Research

Several topics could be considered for additional research. There is a need to study the differences in competency achievement by the university attended. Students are looking to an

academic institution that provides enough guidance to achieve competency before graduation, applicability, and connection between the job and the courses studied. This situation was evidenced by fewer dentists working in insurance dental health centers and private centers from the universities with lower scores. However, there was no significant data to affirm this. Thus, I suggest further investigation, increasing the sample of participants to explore this dynamic.

I recommend a deep analysis regarding faculty perceptions of dental students' level of preparedness, including understanting their persptectives for improving DR dental education. The findings of this study indicate the need to to renovate the preclinical and clinical structures. There is evidence that there is a wide disparity of curriculum styles and graduation requirements among university programs in the DR (Taveras, 2007; Thomas, 2016). It was evidenced in the significant differences found between students, practicing dentists, and faculty depending on the university. Although students acquire the requisite competencies, it was also evidenced in the hours that the dental curriculum implements in different universities' preclinical courses according to the stakeholder responses. Although, overall, all of them were agree on the dental curriculum implements these preclinical courses. The differences found in all responses, especially in the faculty responses, indicate a need to improve preclinical courses in different dental school programs.

Additional research should be considered regarding faculty perspectives for improving students' competency achievement and DR dental education. This study would allow for a closer look at faculty perceptions and opinions on how to improve DR dental education. Also, as a third study, could be replicating this study to include all dental schools and more stakeholders students at multiple institutions. This study would consider outcomes based on multiple curriculums, institutional influences, and experiential learning opportunities.

It would also be informative to consider the industry professionals' expectations regarding students' competencies at each dental school. This study would explore how these stakeholders suggest improving dental education and dental practice in the DR.

Concluding Thoughts

The pressure for improving the dental healthcare system is a complicated situation that is not a sole preoccupation of the DR. Some have stated that it is comprised of countless situations and involve taking awareness of the social, political, and cultural context (Gallagher, 2002; Gallagher & Wilson, 2009). Including the influences of critical players and vital stakeholders, such as government, universities, health service management, other professions, patients, and the public (Gallagher, 2002; Gallagher & Wilson, 2009). The necessity to change the dental health care system is not only a single country's necessity. On the contrary, it must be part of the international movements of professionals (Gallagher & Wilson, 2009). As the literature affirms, facing a dental health care system's multiple challenges should be addressed with multiple stakeholders working together (Gallagher & Wilson, 2009). While there is no agreed-upon formula for the best dental undergraduate education, it is evidenced that both health care professionals and dental education preferred curricular structure is a CBE approach (Lagali-Jirge, 2015). There is evidence that there is a wide disparity of curriculum styles and graduation requirements among university programs in the DR (Taveras, 2007; Thomas, 2016). It was evidenced in the significant differences between students, practicing dentists, and faculty depending on the university. Although students acquire the requisite competencies, it was also evidenced in the hours that the dental curriculum implements in different universities' preclinical courses according to the stakeholder responses.

I propose incorporating national competencies for the dental practice, adding licensure requirements and policies for the dental practice. I proposed creating National Advisory Boards,

and creating school Boards to improve quality education, and creating policies to improve dental education. I suggest focusing on strategies to improve the teaching of preclinical courses and clinical courses.

I recommend implementing a merit system with an incentive program for faculty members and administrative employees. Professionals and administrators must be evaluated, ensuring maintaining institutional quality and increasing university acceptance in the labor market. I recommend implementing curriculum management strategies to provide course material, teaching strategies, faculty development system, and merit system for faculty. I also recommend that MESCyT and universities work together to establish policies and an improvement plan for having full-time faculty and promoting academic careers within DR dental faculty to improve quality teaching and education.

I recommend implementing all EBD domains as part of their dental practice, such as learn to recognize risk factors that require intervention to prevent disease. Understand the meaning of EBD, evaluate, and integrate the best research outcomes with clinical expertise, implement strategies for specific patient care scenarios, and implement a systematic strategy for finding evidence) (ADEA Commission on Change and Innovation in Dental Education, 2006; American Dental Education Association, 2016).

Another critical issue is the curriculum content, which should address dentists' competencies in the 21st century. In that sense, there is an agreement between all American schools of dentistry accredited by the ADA that critical thinking and problem-solving abilities are mandatory for dental students. Along with these skills, they also agreed that dentists become lifelong learning individuals, and dental education should integrate the technology that the dental profession includes routinely during dentistry (Haden et al., 2006). Also, students need to become self-directed learners (Haden et al., 2006). It was also evidenced by the relationship between

faculty, industry, and students, which is a must. Talking amongst faculty and industry would go a long way in closing the division gap between them and ensuring the best curriculum possible and labor pool for the future. The final vital piece is not merely to have a conversation but also to continually assess the educational process and dental practice outcomes. These conversations also should include COD and MESCyT. Finally, these actions should protect patients from unqualified dentists and enhance Dominican dental education, including dental competencies.

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Appendix A

Terminology Used in this Study

Competence is defined as a person's capacity or skill to do a job appropriately (Mascarenhas & Altman, 2016). In educational environments, competencies define the career's established standards and train and instruct professionals (Mascarenhas & Altman, 2016). Competency referred to the abilities, understanding, and professional practice who can practice independently without receiving anyone's guidance (Yip & Smales, 2000).

Clinical skills are the mechanical and clinical abilities that dental students must acquire while studying dentistry and exhibit as dentists to practice (Lugassy et al., 2018; Steiner-Oliveira et al., 2008).

The curriculum is the total program concepts and actions designed by an educational organization to meet learners' educational needs and accomplish the chosen educational goals (McCain & Merril, 2001).

Perception is related to seeing into others' minds through their conduct pattern (Green, 2012).

The ADEA (2006) defines *critical thinking* as a reflective practice where individuals use their mental capacity to evaluate a situation or information (Hendricson et al., 2006). *Critical thinking* is the logically well-organized method of examining information, finding new answers, and inspecting opinions to differentiate them from evidence (Albino et al., 2008; Haden et al., 2006). Hooks (2010) also defines *critical thinking* as an interactive process between teachers and students. It comprises discovering answers to questions to the "who, what, where and how" of any subject. Uses that information in order to determine what is the most crucial thing (Hooks, 2010).

According to the ADEA (2006), *problem-based-learning* (PBL) is the last phase of the critical thinking process (Hendrickson et al., 2006). Koschmann (1996) defines PBL as "a collaborative, case-centered, and learner-directed method of instruction" (p. 96). According to Albino et al.

(2008), PBL is a method of answering questions when the response is not clear by applying a scientific method.

According to the ADEA (2006), *self-directed learning (S*DL) is the capacity to control the learning experience (Hendricson et al., 2006).) SDL is also a process where the students take control of their learning by preparing, implementing, and assessing their own educational needs and results without others' help (Murad & Varkey, 2008).

According to the ADEA (2008), *health care promotion involves* actions that include prevention and control of health and implementing educational strategies (Albino et al., 2008; Hendrickson et al., 2006). *Health care promotion* includes actions implemented to defend or develop oral health and welfare through instruction, socioeconomic, legal, fiscal, ecological, and social actions, allowing communities and individuals to grow the causes of health, thus increase healthiness (Albino et al., 2008).

Communication and interpersonal skills are part of a combined competence with two different aspects (Duffy, 2004). It includes communicating with all kinds of people and is referred to as interrelating with people from diverse cultures (Albino et al., 2008). Communication skills consist of executing special assignments and attitudes such as completing a medical history, explaining a diagnosis and prognosis, providing instructions for treatment, giving information or advice (Duffy, 2004). Interpersonal competencies are the abilities we use every day to converse and interrelate with other people, both individually and in groups. Individuals with strong interpersonal abilities are often more effective in their professional and personal lives (Albino et al., 2008).

According to the ADEA (2008), *professionalism* includes ethical behavior during a patient's treatment. It is also demonstrating competencies to treat patients (Albino et al., 2008;

(Hendrickson et al., 2006). Demonstrating *professionalism* is defined as a competency to be acquired by health care professionals, and it is known as the group of abilities that are typical of a profession (Patel et al., 2018; Zijlstra-Shaw, Robinson, & Roberts, 2012). It is a term initially related to medicine and includes training in skills and methods validated by the public. It includes acquiring knowledge, and the professional's decision and recommendation are focused on a set of fundamental values (Cruess et al., 2009). The competency professionalism is defined as the body of qualities or features characteristic of a profession.

According to the ADEA (2008), *practice management and informatics* consist of applying and evaluating incipient information, including technology, during clinical practice (Hendrickson et al., 2006). Includes making effective administration of business, finances, and human resources. This competency includes quality assurance, assessment, and enhancement concepts. Northouse (2013) *defines management* as an art and a science, a procedure used to accomplish an organization's goals. However, *informatics* is the application related to technology and information used to provide health care. These comprise data and knowledge required for ethical decision-making and problem-solving (Albino et al., 2008).

According to the ADEA (2008), *patient care* includes patient evaluation, diagnosis, and treatment planning (Hendrickson et al., 2006). Patient *care is* usually known as patient-centered care (PCC) and is incorporated in the healthcare professions. PCC denotes patient-focused care and is intended to better address the patient's needs as a complete human being by containing shared decision-making (Cheng at al., 2016).

The ADA defines evidence-based dentistry (EBD) as a methodology implemented to oral health care, requires the integration of regular assessment of clinically significant scientific evidence related to patients' oral and medical condition taking care of patient's medical history as

well as any medical condition based on the dentist's expertise and taking care of patients needs and preferences (Haron, Sabti, & Omar, 2012).

According to the ADEA (2008), *establishment and maintenance of oral health* include the application of infection control during the patient's treatment. It includes controlling the patient's pain and anxiety, besides preventing and managing several dental procedures. Also, management of medical and dental emergencies, performing restorative procedures, replacing missing teeth, maintaining the function, promoting soft and hard tissue health, oral mucosal and osseous diseases, identifying drug abuse, and patient abused or neglect (Hendrickson et al., 2006). It also includes providing effective communication to patients regarding good oral health and good oral hygiene and the importance of following a dentist's recommended treatment (Weisman, 2002). In addition to these competencies identified by the ADA, they are required clinical skills that all general dentists need to achieve to treat patients. Below is more information on each one.

Cariology is a new concept in dentistry referred to taking charge of the risk assessment, diagnosis, detection, and monitoring of dental caries. It includes assessing and managing dental caries (Hendrickson et al., 2006; Pitts, 2011).

Dental public health is the dental science of preventing and controlling dental illnesses and encouraging dental health through planned community efforts by serving the community rather than the individual. It is related to the community's dental health education, applying dental research, and preventing and controlling dental diseases on a community basis (ADA, 1976).

Endodontics is the branch of dentistry involved in the dental pulp and periapical tissues, and it is dedicated diagnosis, prevention, and treatment of pulp and periapical pathology and the pulp disease (Ingle, 2009).

Oral surgery is the dentistry a branch that diagnoses, prevent, and treats diseases, disorders, and oral cavity conditions (Vadji, 2011).

Operative dentistry is dedicated to the functional, restorative, and aesthetic problems linked with the teeth (Ireland, 2010).

Pediatric dentistry is a specialty that offers primary, comprehensive, preventive, and therapeutic oral health care for babies and children through puberty, including those with unique health care necessities (ADA, 1995).

Orthodontics is a division of dentistry dedicated to treating irregularities of the teeth. The goal is to achieve better stability of the jaws (Grist, 2010).

Prosthodontics is the dentistry branch that deals with replacing absent teeth and associating mouth or jaw structures with bridges or crowns. Sometimes, restorative dentistry involves restoring teeth in a single visit, whereas prosthodontics involves replacing missing teeth Moreover, it requires multiple visits and employing a dental laboratory (Ahmad, 2012).

Periodontics is a division of dentistry that is dedicated to diagnosing and treating illnesses of the tissues adjacent to the teeth (Sell, & Chapman, 2012).

Appendix B

Western Michigan HISRB Approval

WESTERN MICHIGAN UNIVERSITY

Institutional Review Board
FWA00007042
IRB00000254

Date: February 5, 2020

To: Andrea Beach, Principal Investigator
Laura Reyes, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: IRB Project Number 20-01-40

This letter will serve as confirmation that your research project titled "The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Faculty, Practicing Dentists and Industry Professionals in The Dominican Republic" has been **approved** under the **exempt** category of review by the Western Michigan University Institutional Review Board (IRB). The conditions and duration of this approval are specified in the policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes to this project (e.g., ***add an investigator, increase number of subjects beyond the number stated in your application, etc.***). Failure to obtain approval for changes will result in a protocol deviation.

In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the IRB for consultation.

The Board wishes you success in the pursuit of your research goals.

A status report is required on or prior to (no more than 30 days) February 4, 2021 and each year thereafter until closing of the study. The IRB will send a request.

When this study closes, submit the required Final Report found at https://wmich.edu/research/forms.

Note: All research data must be kept in a secure location on the WMU campus for at least three (3) years after the study closes.

Office of the Vice President for Research
Western Michigan University
1903 W. Michigan Ave., Kalamazoo, MI 49008-5456
phone: (269) 387-8293 fax: (269) 387-8276
website: wmich.edu/research/compliance/hsirb

CAMPUS SITE: Room 251 W. Walwood Hall

Appendix C

UNIBE's IRB Approval English Version

UNIVERSIDAD IBEROAMERICANA • UNIBE •
VICERRECTORIA ACADÉMICA

Universidad Iberoamericana (UNIBE)
Francia Avenue No. 129, Gazcue
Santo Domingo, Dominican Republic, 20733.

Subject: Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received and reviewed a request by Laura Virginia Reyes Alardo to conduct a research project entitled "The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Faculty, Practicing Dentists and Industry Professionals in The Dominican Republic." I approve that this research can be conducted at our School of dentistry.

When the researcher receives approval for his/her research project from the Western Michigan University's Institutional Review Board/WMU IRB, I agree to provide access to the approved research project. If we have any concerns or need additional information, we will contact the Western Michigan University's Kalamazoo MI 49008-5456 USA, (269) 387-8298 at http://www.wmich.edu/research/compliance/hsirb.

Sincerely,

Dr. Odile Camilo.
Academic Vice Chancellor.
809-689-4111ext 2002.

AV. FRANCIA # 129 • APARTADO POSTAL 23333 • SANTO DOMINGO, REP. DOMINICANA
TELÉFONO: 809-689-4111 EXT. 2002• FAX: 809-686-5821• www.unibe.edu.do

UNIVERSIDAD IBEROAMERICANA • UNIBE •
VICERRECTORÍA ACADÉMICA

Universidad Iberoamericana (UNIBE)
Francia Avenue No. 129, Gazcue
Santo Domingo, República Dominicana, 28333.

Asunto: Carta de Aprobación para realizar investigación

A quien pueda interesar:

Esta carta reconoce que he recibido y revisado una solicitud de Laura Virginia Reyes Alardo para llevar a cabo un proyecto de investigación titulado " La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, profesores, dentistas en ejercicio y profesionales de la industria en la República Dominicana". Esta investigación se estará llevando en la Escuela de Odontología y apruebo que esta investigación se realice en Nuestra facilidad.

Cuando el investigador recibe la aprobación para su proyecto de investigación del Consejo de Revisión Institucional de la Universidad de Western Michigan / WMU IRB, acepto proporcionar acceso para el proyecto de investigación aprobado. Si tenemos alguna inquietud o si necesitamos información adicional, nos pondremos en contacto con el Kalamazoo MI 49008-5456 de la Universidad de Western Michigan.
Tel. (269) 387-8298 en http://www.wmich.edu/research/compliance/hsirb.

Sinceramente,

Dr. Odile Camilo.
Vicerrectora Académica.
809-6894111ext 2002.

Appendix C-1

UNIBE's IRB Approval Spanish Version

UNIVERSIDAD IBEROAMERICANA • UNIBE •

19 de febrero de 2020
Santo Domingo, Rep. Dom.

Dra. Laura V. Reyes
Aplicación: CEI2020-04

Estimada,

Por este medio, le informamos que el proyecto de investigación *"La adquisición de las competencias odontológicas: Percepción de los estudiantes."* presentado por usted al Comité de Ética, pasó por el proceso de revisión del Comité de Ética de Investigación (CEI). Este proyecto ha sido **APROBADO** en las condiciones en que fue presentado junto a la documentación que se les requirió para tales fines y junto a las solicitudes adicionales que se realizaron posteriores a la evaluación.

El Comité de Ética ha realizado una revisión del proyecto (diseño del estudio, instrumentos a utilizar, encuestas, cuestionarios, documentos de consentimiento informado, cartas de colaboración y/o autorización, la confidencialidad en el manejo y almacenamiento de la información de los participantes) presentados por el investigador, los cuales han sido considerados que **CUMPLEN** con la normativa de protección al ser humano tal como se estipula en el Manual de Ética de Investigación de la Universidad Iberoamericana.

Muy cordialmente,

Rosa Hilda Cueto
Coordinadora
Comité de Ética de la Investigación
Universidad Iberoamericana (UNIBE)

Appendix C-2

Approval Letters Other Schools of Dentistry Spanish Version

Universidad Autónoma De Santo Domingo
PRIMADA DE AMÉRICA
Fundada El 28 de Octubre del 1538

Facultad De Ciencias De La Salud
Escuela de Odontología
"AÑO DE LA INTEGRACIÓN Y RENOVACIÓN ACADÉMICA"

Ciudad Universitaria
25 de febrero 2020

ODO-No.020/2020

Señores: **Honorable Consejo Directivo**
Facultad Ciencias de la Salud
Presentes

Vía: **Dra. Rosel Fernández**
Decana Facultad Ciencias de la Salud

Honorables Señores:

Cortésmente les remitimos para su aprobación la Resolución **ODO-021/2020,** del Honorable Sub-Consejo Directivo de esta Escuela, celebrada el día martes 24 de febrero 2020, donde se aprueba autorizar a la Dra. Laura Reyes hacer el levantamiento de investigación sobre *"Adquisición de Competencias Dentales y Destrezas Clínicas"*, en la Escuela de Odontología de la UASD.

Atentamente,

Dr. Angel Nadal
Director.-

Escuela de Odontología FCS

AN/or.-

UCATECI Mail Approval

Subject: solicitud tesis doctoral

Inbox x

Dr. Rafael Saint-Hilaire Suarez <sainthilaire@ucateci.edu.do> Wed, Jan 22, 4:42 PM

to me, Rafael, sainthilaire@yahoo.com

Buenas tardes Dra. Reyes

Luego de un cordial saludo y contestando su correo, le informo que puede contar con mi apoyo para lo necesario.

Saludos cordiales!

Dr. Rafael Saint-Hilaire Suarez
Director | Esc. Odontologia
T. 809-573-1020 ext. 2356 | C. 809-865-8282
E. sainthilaire@ucateci.edu.do | P. **www.ucateci.edu.do**

_____

UNIRHEMOS Mail Approval

UNIRHEMOS Wed, Jan 29, 4:11 PM

Buenas tardes !
Con gusto seguimos colaborando con su trabajo de tesis.
Cuando guste puede pasar a traer la información tanto en físico o por correo electrónico.

UOD Mail Approval

Buenos días ,Laura te envío los datos requeridos para tu tesis cualquier otra información estamos a tu orden.

Universidad Odontológica Dominicana
Vilma Deschamps.M.A.
Rectora
Av.27 de Febrero esq. calle Ira Las Palma (Las Caobas)
Santo Domingo Oeste, Republica Dominicana.
Teléfono 809-560-7461 Ext: 222

Appendix D

Requested Letter to Conduct the Study to Dental School Directors Per University (UASD, UNIBE, UCE, UOD, UNIRHEMOS, UFHEC, UCATECI, PUCMM SANTAGO, PUCMM SANTO DOMINGO, UCNE, UNPHU) English Version

To: Sub Council of the School of Dentistry
Via: Director School of Dentistry:
Dear Director:

In support of my doctoral dissertation, I am conducting a survey to gather information on the acquisition of dental skills and clinical skills: perceptions of students, graduates, professors and industry professionals in the Dominican Republic.

I kindly request your authorization and assistance to collect data on my doctoral thesis (Ph.D.) from your dental students and teachers from your dental school. This investigation is submitted for approval by the committee; of ethics at Western Michigan University where I am carrying out my PhD. After obtaining authorization from Western Michigan IRB's, I will proceed to send it as support.

The students of interest for the study are those who are in the last semester of the dental curriculum. After your approval, I will proceed to send an email to your school of dentistry personal e-mail with my survey link on a google forms to be distributed to your dental teachers and students. If I do not obtain a representative sample, I would also like to be allowed to be able to leave hard copies so that they can be distributed anonymously and voluntarily to the requested population, through a convenience sample method. Then, I would be picking it up. This investigation lasts one month. My doctoral thesis is a study that includes the perceptions of students, practicing dentists, industry professionals and professors of all dental schools in the country.

The title is: The acquisition of dental skills and clinical skills for the practice of dentistry: perception of students, practicing dentists, teachers and industry professionals.

These surveys would be conducted during the month of February 2020. All the information collected will be completely confidential and will be used exclusively as part of my doctoral thesis. However, with the results, I would like to provide each dental school in the Dominican Republic with a diagnosis of the current situation of dentistry in the Dominican Republic. It could serve as a first step in the regulation of the practice of dentistry in our country by allowing everyone to establish criteria and background for the creation of the basic competences of the practice of dentistry in our country.

Sincerely,
Laura Reyes Alardo Ph D. (c)

Appendix D-1

Requested Letter to Conduct the Study to Dental School Directors Per University (UASD, UNIBE, UCE, UOD, UNIRHEMOS, UFHEC, UCATECI, PUCMM SANTAGO, PUCMM SANTO DOMINGO, UCNE, UNPHU) Spanish Version

Al: Sub Consejo de la Escuela de Odontologia de
Vía: Director Escuela de Odontología:
Estimados Director:

En apoyo de mi disertación doctoral, estoy llevando a cabo una encuesta para reunir información sobre la adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, graduados, profesores y profesionales de la industria en la República Dominicana.

Solicito amablemente su autorización y asistencia para recopilar datos de mi tesis doctoral (Ph.D.) de sus estudiantes de odontología y de los docentes de su escuela de odontología. Esta investigación está sometida para aprobación por el comité; de ética de la Universidad Western Michigan donde llevo a cabo mi doctorado. Luego de obtenida la autorización de Western Michigan, procederé a enviarles la misma como soporte.

Los alumnos de interés para el estudio, son aquellos que se encuentran en el último semestre del plan de estudios. Tras su autorización, procederé a enviarle un correo electrónico a la Escuela de Odontología con el enlace a mi encuesta en google forms para que sea distribuido a los docentes y alumnos. En caso que no obtenga una muestra representativa, también me gustaría, se me permitiera poder ir a dejar copias en físico para que puedan ser distribuidas de manera anónima y voluntaria a la población solicitada. Luego la estaría recogiendo. Esta investigación tiene duración de un mes. Mi tesis doctoral es un estudio que incluye las percepciones de estudiantes, dentistas practicantes, profesionales de la industria y profesores de todas las escuelas de odontología del país.

El título es: La adquisición de habilidades dentales y habilidades clínicas para la práctica de la odontología: percepción de estudiantes, dentistas practicantes, profesores y profesionales de la industria.

Estas encuestas se realizarían durante el mes de enero y febrero de 2020. Toda la información recopilada será completamente confidencial y se utilizará exclusivamente como parte de mi tesis doctoral.

Resumen:

En una era de globalización, las instituciones de educación superior (IES), especialmente aquellas dedicadas a la enseñanza de profesionales de la salud, enfrentan desafíos constantes. Una de ellas es la continua evolución de la tecnología y la ciencia que el mundo está experimentando. La expectativa es que los graduados en salud sean más competentes ahora que en el pasado. Los programas de salud deben incorporar a sus estructuras curriculares nuevos requisitos que aseguren que sus graduados se conviertan en individuos con múltiples habilidades. Por lo tanto, se necesita un conjunto de competencias específicas para que los estudiantes puedan enfrentar el siglo XXI y sus demandas constantes (Alcota, De Gauna y González, 2016; Chan, Fong, Luk y Ho, 2017; Crick, 2008; Noddins, 2007; Voogt y Roblin, 2012). Saber esto es específicamente crucial en el campo de la odontología, ya que varias organizaciones e instituciones trabajan para fortalecer el futuro de la profesión dental (Alcota et al., 2016).

Muchas asociaciones relacionadas con el campo de la odontología sugieren que los programas dentales incluyen competencias como parte de las habilidades que adquieren sus graduados dentales durante la educación dental. En los EE. UU., La American Dental Education Association (ADEA), así como la American Dental Association (ADA, 2016), desarrollaron competencias que guían los estándares de educación postsecundaria. Estos incorporaron comportamientos éticos y profesionales, como "equidad, integridad y responsabilidad", y recomendaron que todas las escuelas de odontología estadounidenses integraran estas competencias en sus programas educativos (Alcota et al., 2016; ADEA, 2012). Junto con estas competencias básicas, otros autores recomendaron que los estudiantes de odontología adquieran otras habilidades, como las habilidades motoras observadas como destreza manual. Los estudiantes también necesitan adquirir amplios conocimientos básicos para basar sus decisiones de tratamiento en evidencia científica (conocida como odontología basada en evidencia EBD). Junto con otras competencias, necesitan desarrollar una conducta ética, demostrada como responsabilidad social, y la integración de los valores morales observados en el tratamiento respetuoso de sus pacientes (Dahan y Bedos, 2010; Hendrickson y otros, 2006; Elani y otros, 2013; Ismail y Bader, 2004; Lewin, Olson, Goodman y Kokotailo, 2004; Lugassy et al., 2018; Qualtrough, Whitworth y Dummer, 1999; Steiner-Oliveira et al., 2008; Schönwetter, 2006).
El entorno del aula, los laboratorios dentales de la escuela, las prácticas preclínicas con situaciones simuladas, así como las prácticas de la clínica dental en situaciones de la vida real, son el entorno de aprendizaje perfecto para lograr competencias (Dahan y Bedos, 2010; Hendrickson et al., 2006; Elani et al., 2013; Ismail & Bader, 2004; Lewin et al., 2004; Lugassy et al., 2018; Qualtrough et al., 1999; Steiner-Oliveira et al., 2008).

Una forma de educación que intenta ayudar a los estudiantes a adquirir tales habilidades es la educación basada en competencias (CBE). CBE tiene cuatro características: (a) resultados de los alumnos que se centran en los requisitos del mercado, (b) módulos organizados en secuencias, (c) estudiantes que avanzan a su propia velocidad y (d) estudiantes evaluados en entornos reales (Albino et al., 2008). El objetivo principal de un plan de estudios CBE es la adquisición de competencias alineadas con lo que la profesión, así como el mercado laboral, requiere de los graduados (Johnstone & Soares, 2014). En 2008, CODA revisó sus criterios predoctorales y estableció además el CBE como la estructura curricular sugerida utilizada para educar a aquellos que se convierten en dentistas generales (Albino et al., 2008).

Un obstáculo observado es la falta de un lenguaje compartido que describa los campos de competencia en las profesiones del cuidado de la salud y las competencias específicas críticas para el desarrollo continuo de dichos profesionales (Englander et al., 2013). Esta falta de lenguaje compartido observado en la educación dental en todo el mundo se debe a que no todos los países tienen un conjunto de competencias enseñadas dentro de sus escuelas dentales universitarias, y el enfoque curricular es diferente para cada programa dental (Englander et al., 2013; Haden et al., 2006). En los EE. UU., La ADEA (2017), así como la ADA (2011), propusieron competencias clave para los graduados dentales como una guía esencial para las escuelas dentales. No existe tal conjunto de competencias dentales nacionales dominicanas para guiar el trabajo de las escuelas de odontología en la RD.

Problema investigable

Desde la creación de la primera escuela dominicana de odontología, la enseñanza dental es eminentemente práctica, y esta situación no ha cambiado con el tiempo (Thomas, 2016). Por lo tanto, la enseñanza de la odontología en la RD se basa más en habilidades que en competencias. Un enfoque basado en habilidades promueve el desarrollo de las habilidades cognitivas y psicomotoras de los estudiantes de odontología a través de la capacitación y el conocimiento adquirido por la práctica a través de entornos simulados y en situaciones reales con pacientes (Thomas, 2016). Aunque este enfoque tiene muchos beneficios para la adquisición de destreza manual por parte de los estudiantes, aún se desconoce si esto se traduce en competencias reales o si cumple con los estándares internacionales para la práctica dental integral. Dentro de la RD, no es obligatorio.

Estas encuestas se realizarían durante el mes de enero de 2020. Me gustaría que enviara un correo electrónico a través de un formulario de Google para encuestas, donde usted introducirá los correos a donde deberá enviar y un mensaje enviado por mi como consentimiento informado para participar, tanto a sus estudiantes de odontología de término y también a sus docentes. De la misma manera, me gustaría su autorización, de modo que, de ser necesario, puedo ir a su institución y entregar copias impresas de mis encuestas para obtener la muestra completa requerida para mi estudio. Toda la información recopilada será completamente confidencial y se utilizará exclusivamente como parte de mi tesis doctoral. Sin embargo, con los resultados, me gustaría proporcionar a cada una de las escuelas de odontología de la República Dominicana un diagnóstico de la situación actual de la odontología en la República Dominicana. Podría servir como un primer paso en la regulación de la práctica de la odontología en nuestro país al permitir que todos establezcan criterios y antecedentes para la creación de las competencias básicas de la práctica de la odontología en nuestro país.

Dra. Laura Reyes Alardo
Ph. D. candidate
Western Michigan University

Appendix E

Mail Requesting Approval to Conduct the Research to the President of the Dominican College of Dentists English Version

Dr. Luis Manuel Despradel

I kindly request your authorization and assistance in gathering data for my doctoral thesis (Ph.D.) from your dental graduates that are in your database. The graduates of interest are those who graduated in the last five years. Following your authorization, I will proceed to send you an e-mail with the link to my survey. Also, I would like authorization to go to any of the meetings held in the Dominican College of Dentists to see if I can gather participants ti fill my survey. My doctoral thesis is a study that includes the perceptions of students, practicing dentists, industry professionals, and teachers of all the schools of dentistry of the country.

The title is: The acquisition of dental skills and clinical skills for the practice of Dentistry: Perception of students, practicing dentists, faculty, and industry professionals.

I will conduct this study during September and October 2019. I want to send an e-mail with the survey link which is below, to dentists' members. In the same way, I would like authorization, so that if necessary, I can go to the College to any meeting and deliver hard copies of the surveys in order to
obtain the entire sample required for this study. All the information gathered will be completely confidential and exclusively used as part of my doctoral thesis. Each Dominican dental school will have a diagnostic of their current dental situation.

Results from this study could serve as one first step in the regulation of the practice of dentistry within the DR. It might help to establish criteria for the creation of the core competencies of dental practice within our country.

Dra. Laura Reyes Alardo. Phd (c)

Appendix E-1

Mail Requesting Approval to Conduct the Research to the President of the Dominican College of Dentists Spanish Version

Estimado Dr. Luis Manuel Despradel:

Luego de saludarle. Cortésmente solicito su autorización y asistencia para recopilar datos para mi tesis doctoral (Ph.D.) Requiero que envié un correo a los odontólogos miembros del colegio y les motive a participar de mi estudio. Después de su autorización, procederé a enviarle un correo electrónico con el enlace a mi encuesta. Además, me gustaría autorización para ir a cualquiera de las reuniones celebradas en el Colegio para ver si puedo reunir a los participantes para completar mi encuesta. Mi tesis doctoral es un estudio que incluye las percepciones de estudiantes, dentistas en ejercicio, profesionales de la industria y maestros de todas las escuelas de odontología del país.

El título es: La adquisición de habilidades dentales y habilidades clínicas para la práctica de la odontología: percepción de los estudiantes, dentistas en ejercicio, profesores y profesionales de la industria.

Estas encuestas se llevarán a cabo durante los meses de septiembre y octubre de 2019. Me gustaría que envíe un correo electrónico con el enlace de mi encuesta que se encuentra a continuación, a los miembros de su dentista. De la misma manera, me gustaría su autorización, de modo que, si es necesario, pueda ir a su institución y entregar copias impresas de mis encuestas para obtener la muestra completa requerida para mi estudio. Toda la información recopilada será completamente confidencial y se utilizará exclusivamente como parte de mi tesis doctoral, sin embargo, con los resultados de la misma, me gustaría proporcionar a cada una de las escuelas de odontología dominicanas un diagnóstico de la situación actual de la odontología en la RD, esto podría servir como un primer paso en la regulación de la práctica de la odontología en nuestro país al permitir que todos establezcan criterios y los antecedentes que se utilizarán en la creación de las competencias básicas de la práctica de la odontología en nuestro país.

Dra. Laura Reyes Alardo. DDS. Ph. D (c)

Appendix F

Survey Mail English Version

Subject Line: Your opinion on the acquisition of dental competencies and clinical skills.

Dear Participant:

I am writing to you to request your participation in a survey. This project will serve as Laura Virginia Reyes Alardo dissertation for the requirements of the degree of Doctor of Philosophy in Educational Leadership at Western Michigan University". If you take part in the research, the steps involve filling an online survey that will be divided into four sections; it will take approximately 14 minutes of the participant's time. It will be confidential, and I do not gather identifying data such as name, email address, or participant's IP address, you will be asked to provide some of your demographic information.

Your responses will be absolutely anonymous, so do not put your name anywhere on the survey. Possible risk and costs to you for taking part in the study may be discomfort from answering sensitive questions and time to complete the survey. A potential benefit of taking part may be a better understanding of your dental competency levels due to the opportunity of reviewing ADA's validated list of dental competencies and helping with the diagnostic of the current Dominican dental situation. Your alternative to taking part in the research study is not to take part in it.

The de-identified (unnamed) data collected for this research may be used by or distributed to investigators for other research without obtaining informed consent from you.
Should you have any questions prior to or during the study, you can contact Dr. Andrea Beach at Office: (269) 387-1725) or Laura Reyes Alardo at 809-729-4598, lauraralardo@gmail.com, lauraviriginia.reyesalardo@wmich.eduy You may also contact the Chair, Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298.

This consent has been approved by the Western Michigan University Human Subjects Institutional Review Board (HSIRB) on January2020.

Participating in this survey online indicates your consent for use of the answers you supply.

Add buttons to click:
https://drive.google.com/drive/folders/1Th2sobKbdzFuSkbmerRktPkWJnCLVn6e
I agree to participate in this research study (Survey following upon clicking)
I do not agree to participate in this research study (You close your Browser)

Appendix F-1

Survey Mail Spanish Version

Subject Line: Your opinion on the acquisition of dental competencies and clinical skills.

Dear Participant:

Querido Participante:

Le escribo para solicitar su participación en una encuesta. Este proyecto servirá como disertación de Laura Virginia Reyes Alardo para los requisitos del grado de Doctor en Filosofía en Liderazgo Educativo en la Universidad Western Michigan ". Si participa en la investigación, los pasos implican completar una encuesta en línea que se dividirá en cuatro secciones; tomará aproximadamente 14 minutos del tiempo del participante. Será confidencial, y no recopilo datos de identificación como el nombre, la dirección de correo electrónico o la dirección IP del participante, se le pedirá que proporcione parte de su información demográfica.

Sus respuestas serán absolutamente anónimas, así que no ponga su nombre en ninguna parte de la encuesta. Los posibles riesgos y costos para usted por participar en el estudio pueden ser la incomodidad de responder preguntas delicadas y el tiempo para completar la encuesta. Un beneficio potencial de participar puede ser una mejor comprensión de sus niveles de competencia dental debido a la oportunidad de revisar la lista validada de competencias dentales de ADA y ayudar con el diagnóstico de la situación dental dominicana actual. Su alternativa a participar en el estudio de investigación es no participar en él.

Los datos no identificados (sin nombre) recopilados para esta investigación pueden ser utilizados o distribuidos a los investigadores para otras investigaciones sin obtener su consentimiento informado.

Si tiene alguna pregunta antes o durante el estudio, puede comunicarse con el Dr. Andrea Beach en la oficina: (269) 387-1725) o Laura Reyes Alardo al 809-729-4598, lauraralardo@gmail.com, lauraviriginia.reyesalardo@wmich.edu También puede comunicarse con el Presidente, la Junta de Revisión Institucional al 269-387-8293 o el Vice Presidente de Investigación al 269-387-8298.

Este consentimiento ha sido aprobado por la Junta de Revisión Institucional de Sujetos Humanos de la Universidad de Western Michigan (HSIRB) en enero de 2020.

Participar en esta encuesta en línea indica su consentimiento para el uso de las respuestas que proporciona.

Agregue botones para hacer clic:
https://drive.google.com/drive/folders/1Th2sobKbdzFuSkbmerRktPkWJnCLVn6e
Acepto participar en este estudio de investigación (Encuesta que sigue al hacer clic)
No estoy de acuerdo en participar en este estudio de investigación (Cierra su navegador)

Appendix G

Survey Follow-up E-mail

Subject Line: Reminder for the Acquisition of dental competencies and clinical skills.

Dear Participant:

Thank you very much to those who have already completed the survey. If you did not have a chance to complete it and are willing to help with my doctoral dissertation, please proceed by clicking the following link

Link

Note: The target group is students, practicing dentists, faculty, and industry professionals in the Dominican Republic.

The following is an anonymous survey and will take less than 14 minutes of your time. I ask that you complete this survey by February 15, 2020. This email will be the final request for participation. Thank you in advance for supporting me by completing this survey.
If you have any questions and concerns, please feel free to contact me by email at lauravirginia.reyesalardo@wmich.edu or lauraralardo@gmail.com.

Sincerely,

Dr. Laura Reyes. DDS
Ph.D. Candidate
Western Michigan University

Appendix G-1

Survey Follow-up E-mail Spanish Version

Línea de asunto: Recordatorio para la adquisición de competencias dentales y habilidades clínicas.

Querido Participante:

Muchas gracias a todos los que ya han completado la encuesta. Si no tuvo la oportunidad de completarlo y está dispuesto a ayudarme con mi tesis doctoral, haga clic en el siguiente enlace

Enlace:

Nota: el grupo objetivo son estudiantes, dentistas practicantes, profesores y profesionales de la industria en la República Dominicana.

Esta es una encuesta anónima y tomará menos de 10 minutos de su tiempo. Le pido que complete esta encuesta antes del 15 de Febrero de 2020. Esta será la solicitud final de participación. Gracias de antemano por apoyarme completando esta encuesta.

Si tiene alguna pregunta o inquietud, no dude en comunicarse conmigo por correo electrónico a lauravirginia.reyesalardo@wmich.edu o lauraralardo@gmail.com.

Sinceramente,

Dra. Laura Reyes. DDS
Candidato a PHD.
Western Michigan University

Appendix H

Students Survey English Version

Department of Educational Leadership, Research and Technology

STUDENT SURVEY

"The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Graduates, Faculty and Industry Professionals in The Dominican Republic".

Section 1

Please provide the following general information about yourself.

1) Age_____

2)Gender

a) Male ☐

b) Female ☐

3)I am currently enrolled at

a) UNIBE	
b) UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i)UCE	
j) UCATECI	
k) UCNE	
l)UTESA.	

Section 2

This section is about the acquisition of Competencies

8) Critical Thinking and Problem Solving.

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Estimate and integrate emergent trends in health care.						
b)Use critical thinking skills						
c) Solve problems in different circumstances						
d)Distinguish the difficulties in a problem						
c)Detect strengths and weaknesses of situations.						
f)Implement the most appropriate option to the resolution of a problem						

9)Self-Directed Learning and Health Care Promotion

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Seek out continued education						
b) Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.						
c)Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in						

the delivery of care.						
d)Identify risk factors that can affect individuals and the population.						
e) Respect the beliefs and preferences of all patients.						

10) Communication and interpersonal skills
Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.						
b)Apply psychosocial and social principles in patient- centered health care						
c)Talk with individuals from diverse populations						
e) Make decisions even when conditions are uncertain.						

11) Practice Management and Informatics
Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Evaluate and apply contemporary and emerging information						
b)Evaluate and						

manage contemporary models of oral health care management						
c)Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.						
d)Demonstrate effective business, financial management, and human resource skills						
e)Understand quality assurance and assessment concepts						

12) Patient Care
Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Address the needs of the patient as a human being.						
b)Facilitate consultation and referrals with all relevant health care providers						
c)Manage medical emergencies by using professional judgment						
d)Provide basic life support and utilize CPR knowledge when needed.						
e)Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects						

13) Evidence-Based Dentistry (EBD)
Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Recognize risk factors that require intervention to prevent disease						
b)Understand the meaning of Evidence-Based Dentistry						
c)Evaluate and integrate the best research outcomes with clinical expertise						
d)Implement strategies for specific patient care scenarios						
e)Implement a systematic strategy for finding evidence						

14) Establishment and maintenance of oral health.
Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Provide prevention, intervention, and educational strategies						
b)Participate with dental team members and other health care professionals in the management and health promotion for all patients						
c)Recognize and appreciate the need to contribute to the improvement of patients oral health						

d)Capacity to evaluate treatment and its outcomes						
e)Integrates the informed consent as a common practice						
f)Utilize universal infection control guidelines for all clinical procedures						
g)Obtain and interpret patient medical data, including a thorough intra/extra oral examination						
h)Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care						
i)Prevent, recognize, and manage medical and dental emergencies						

15) Professionalism

Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Apply ethical and legal standards in the provision of dental care						
b)Consult with or refer to professional colleagues when indicated						
c)Demonstrate business, financial management, and human resource skills						
d)Provide quality assurance when treating patients						

e)Display professional behavior						
f)Consider a patient's well being						
g)Possess patient's examination skills						
i)Control patient's pain and anxiety						

16)Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Think in a critical way						
b) Seek solutions for problems						
c)Learn subjects on my own						
d)Promote patient's health care						
e)Communicate with patients						
f)Demonstrate that I am a professional						
g)Manage my office businesses, finances, and human resources						
h)Take care of my patient						
i)Establish patient's oral health						
j)Maintain patient's oral health						
k)Implement principles of evidence-based dentistry						
l)Plan and make decisions						

Section 3

Demonstration of Dental Practice Clinical Skills in Several Areas of Dentistry

17) Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.

Rate your level of confidence for the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Prevent, diagnose and mange periodontal diseases						
b)Manage the oral health care of children and adolescents						
c)Manage the oral health care of adults.						
d)Manage restorative procedures that preserve tooth structure, maintain function and esthetic						
e)Diagnose, identify and manage pulpal and peri-radicular diseases						

18) Oral Surgery, Prosthodontics, Dental Public Health.

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Diagnose and manage oral surgical treatment needs						
b)Replace missing or defective tooth structure, maintaining function and esthetics						
c)Evaluate outcomes of comprehensive dental care						
d)Diagnose and manage developmental occlusal						

abnormalities						
e)Prevent, diagnose and manage temporomandibular disorders						
f)Manage the replacement of teeth for the partially or complete edentulous patient						
g) Communicate and collaborate with groups and individuals with oral health issues						
h)Promote good oral health habits in individuals and communities						

19) Cariology, Orthodontics

Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Prevent and control dental caries						
b)Develop strategies of assessment and management of dental caries						
c)Understand Anatomy and Craneo-facial growth and its relation with children's development						
d)Implement Preventive and Interceptive Orthodontic						
e)Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics						

20) Rate your level of confidence for being able to do the following. Practice effectively:

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Restorative dentistry						
b) Endodontics						
c)Oral surgery						
d)Preventive dentistry						
e) Orthodontics						
f) Periodontics						
g) Prosthodontics						
h)Cariology						
i)Public Health						

Section 4

Dental Curriculum Component (Teaching strategies, preclinical/ clinical hours, community service, Evidence –based dentistry)

Indicate if your level of agreement with:

21) My dental curriculum implements preclinical courses for these dental areas

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Dental Anatomy						
b)Operative dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if your level of agreement with:

22) The hours that my dental curriculum implements in preclinical courses for these dental areas were enough to teach me how to treat patients

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree

a)Dental Anatomy						
b)Operative dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if your level of agreement with:
23) My Professors have taught me how to effectively

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Solve problems						
b)Implementing best patient's treatments considering benefits and harms of alternative care options						
c)Think in a critical way						
d)Seek solutions to cases						
e) Conducting dental research						
f) Systematic reviews of the literature in any of my dental courses.						
g) Implementing best patient's treatments considering benefits and harms of alternative care options						

Indicate if your level of agreement with:
24) The community service of my dental curriculum prepared effectively to

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Being engaged in the community and strive to make it a better place						
b)To appreciate the influence of social, cultural, and economic forces on oral health care						
c) Health Promotion						
d) To understand and cooperate to Local and Global Public Health						
e) Experiences in Community Health as part of my dental curriculum						

f) Extracurricular experiences in community health during my life as student						

Indicate if your level of agreement with:
Teaching strategies
25) Overall the teaching strategies my professors used to teach me were motivating and enriching

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree

Indicate if your level of agreement with:
26) The strategies my professors used to teach me include:

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a) Cases to Solve problems						
b) Lectures						
c) I learned to record videos						
d) I had to do reflective journals						
e) brain storming						
f) Video tutorials of any material taught						
g) Technology such as WhatsApp chat, face book, google docs, etc						
h) Online classes						
i) Cooperative learning						
j) preclinical sessions						
k) Perform clinical rotations to help students who are working in the clinical areas						
l) Attend to conventions and extracurricular courses outside or inside the university						
m) Doing posters						

Preparation
Indicate if your level of agreement with:
27) The clinical practices in these areas prepared effectively to treat patients

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Diagnostics						
b)Operative dentistry						
c) pediatric Dentistry						

e) Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Cariology						
j) Public health						

28) Preparation
Indicate if your level of agreement with:
I perceive I can effectively

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Practice dentistry when I graduate						

29)The strengths in my dental curriculum are

_____
_____
_____
_____

30)The weaknesses in my dental curriculum are

_____
_____
_____
_____

Thank you

Appendix H-1

Students Survey Spanish Version

Departamento de liderazgo educativo, investigación y tecnología.

Encuesta a Estudiantes

"La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados, docentes y profesionales de la odontología en la República Dominicana"

Sección 1

Por favor proporcione la siguiente información general sobre usted:

1) Edad_____

2) Sexo

a) Masculino ☐

b) Femenino ☐

3) Actualmente estudio en:

a) UNIBE	
b) UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i)UCE	
j) UCATECI	
k) UCNE	

Sección 2

Dirección:

La siguiente sección corresponde a la adquisición de competencias durante tu educación dental.

9) Pensamiento crítico y resolución de problemas.

Califique su nivel de confianza sobre:

Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Integrar las tendencias emergentes en el cuidado de la salud oral						
b)Poseer un pensamiento critico						
c) Solucionar problemas en diferentes circunstancias						
d) Distinguir las dificultades en un problema						
c)Detectar las fortalezas y						

debilidades de las situaciones que se presenten						
f) Implementar las opciones más apropiadas en la resolución de un problema.						

10) Aprendizaje auto-dirigido y promoción de la salud
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Mantenerse estudiando continuamente (o renovando conocimientos)						
b) Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
c) Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
d) Identificar los factores de riesgo que pueden afectar a las personas y la población.						
e) Respeta las creencias y preferencias de todos los pacientes.						

11) Comunicación y habilidades interpersonales
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
b) Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
c) Hable con personas de diversas poblaciones						
e) Toma decisiones aun cuando las condiciones son inciertas.						

12) Administración de consultorio and Informática
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Evaluar y aplicar información contemporánea y emergente						
b) Evaluar y gestionar modelos contemporáneos de gestión de la atención de la salud bucal						
c) Comprenden los principios del manejo riesgos, incluido el						

consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
d) Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
e) Entender los conceptos para asegurar la calidad del tratamiento y manejo el bue manejo de los pacientes.						

13) Atención al paciente
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Abordar las necesidades del paciente como un ser humano completo.						
b)Facilitar consultas y referimientos con los especialistas relevantes						
c) Manejar emergencias médicas usando juicio profesional						
d) Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
e) Diferenciar la relación entre la						

enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

14) Odontología basada en la evidencia (OBE)
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
b) Comprender el significado de la odontología basada en la evidencia						
c) Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
d) Implementar estrategias para escenarios específicos de atención al paciente						
e) Implementar una estrategia sistemática para encontrar evidencia.						

15) Establecimiento y mantenimiento de la salud bucal.
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Proporcionar estrategias de prevención, intervención y educación						
b) Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
c) Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
d) Capacidad para evaluar el tratamiento y sus resultados						
e) Integra el consentimiento informado como práctica común						
f) Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
g) Obtener e interpretar los datos médicos						

del paciente, incluido un examen intra / extra oral completo						
h) Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						
i) Prevenir, reconocer y manejar emergencias médicas y dentales						

16) Profesionalismo
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Aplicar estándares éticos y legales en el suministro de cuidado dental						
b) Consultar o referir a colegas profesionales cuando esté indicado						
c) Demostrar habilidades comerciales, de gestión financiera y de recursos humanos						
d) Proporcionar garantía de calidad al tratar pacientes						

e) Mostrar comportamiento profesional						
f) Considerar el bienestar de un paciente						
g) Poseer habilidades para el examen del paciente						
i) Controlar el dolor y la ansiedad del paciente						

17) Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Pensar de una manera crítica						
b) Buscar soluciones a problemas						
c)Aprender sobre tópicos por su cuenta						
d)Promover la atención medica del paciente						
e)Comunicarse con los pacientes						
f)Demostrar que es un profesional						
g) Administrar los negocios, las finanzas y los recursos humanos de su oficina						

h) Cuidar del paciente						
i)Establecer la salud oral del paciente						
j) Mantener la salud oral del paciente						
k) Implementar principios de odontología basada en la evidencia.						
l) Planificar y tomar decisiones						

Sección 3

Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

18) Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia.

Califique su nivel de confianza sobre:

Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Prevenir, diagnosticar y tratar enfermedades periodontales						
b) Manejar la atención de salud oral de niños, adolescentes						
c) Manejar la atención de salud oral de los adultos						
d) Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
e) Diagnosticar,						

identificar y controlar las enfermedades pulpares y perirradiculares						

19) Cirugía Oral, Prostodoncia, Salud Publica Dental.
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico oral						
b) Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
c) Evaluar los resultados de la atención dental integral						
d)Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
e) Prevenir, diagnosticar y tratar trastornos temporomandibulares						
f) Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
g) Comunicarse y colaborar con						

grupos e individuos con problemas de salud oral						
h) Promover buenos hábitos de salud oral en individuos y comunidades.						

20) Cariologia, Ortodoncia
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Prevenir y controlar la caries dental						
b) Desarrollar estrategias de evaluación y manejo de la caries dental						
c) Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
d) Implementar Ortodoncia Preventiva e Interceptiva						
e) Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

21)
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Odontología Restauradora						
b) Endodoncia						
c) Cirugía Oral						
d) Odontología Preventiva						
e) Ortodoncia						
f) Periodoncia						
g) Prostodoncia						

Sección 4

Componente del currículo dental (estrategias de enseñanza, horas preclínicas / clínicas, servicio comunitario, odontología basada en la evidencia)

Indique si esta de acuerdo en lo siguiente.

22) El plan de estudios dental en que estudio implementa cursos preclínicos para estas áreas dentales

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Anatomía Dental						
b) Odontología Restauradora						
c) Anestesia Dental						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Biomateriales						

Indique si está de acuerdo en lo siguiente.

23) Las horas que implementa mi plan de estudios odontológicos en los preclínicos para estas áreas dentales fueron suficientes para enseñar a mis alumnos cómo tratar a los pacientes

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a)Anatomía Dental						
b) Odontología Restauradora						

c)Anestesia Dental						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Biomateriales						

Indique si está de acuerdo en lo siguiente.
24) Las sesiones preclínicas en estas áreas me han preparado de manera efectiva como un futuro dentista

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Anatomía Dental						
b) Odontología Restauradora						
c)Anestesia Dental						
e)Endodoncia						
f)Prostodoncia						
g)Periodoncia						
h) Cirugía Oral						
i)Biomateriales						

Indique si está de acuerdo en lo siguiente.
25) El plan de estudios odontológicos donde estudio dedica tiempo para preparar a los estudiantes de odontología de manera efectiva en estas áreas

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Llevar a cabo investigaciones dentales						
b) Revisiones sistemáticas de la literatura en cualquiera de las clases para mantenernos actualizado.						
c) Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos.						

Indique si está de acuerdo en lo siguiente.
26) Mis profesores me han enseñado a cómo

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a)Solucionar problemas						
b) Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos						
c) Pensar de manera critica						
d) Buscar soluciones a los casos						

Indique si está de acuerdo en lo siguiente.
27) El servicio comunitario de mi plan de estudios dental me prepara efectivamente para

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Estar comprometido con la comunidad y esforzarse para que sea un lugar mejor						
b) Apreciar la influencia de las fuerzas sociales, culturales y económicas en el cuidado de la salud oral						
c) Promoción de la salud						
d) Comprender y cooperar con la Salud Pública Local y Global						

e) Experiencias en salud comunitaria como parte del plan de estudios dental						
f) Experiencias extracurriculares en salud comunitaria durante la vida como estudiante						

Indique si está de acuerdo en lo siguiente.
Estrategias de enseñanzas
28) En general, considero que las estrategias de enseñanza que han usado para ensenarme son motivadoras y enriquecedoras

1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo

Indique si está de acuerdo en lo siguiente.
29) Las estrategias que utilizan para enseñarme incluyen:

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Resolución de casos						
b)Asistir a conferencias						
c) Realizar videos						
d) Realizar diarios reflexivos						
e) Lluvia de ideas						
f) Tutoriales con temas mostrados en clase						
g) Uso de la tecnología tales como chat de whatsapp, facebook, google docs, etc.						
h) Clases virtuales						
i) Aprendizaje cooperativo						
j) Preclínicos						
k) Ayudantías clínicas, de los diversos trabajos						

que se realizan en la clínica dental.						
l) Participación en congresos y cursos extracurriculares fuera o dentro de la universidad						
m) Elaboración de posters						

Formación
Indique si está de acuerdo en lo siguiente.
30) Las prácticas clínicas en estas áreas me preparan eficazmente para tratar a los pacientes

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Diagnostico						
b) Odontología restauradora						
c) Odontopediatría						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Cariología						

31) Formación
Indique si está de acuerdo en lo siguiente.
Yo percibo que puedo efectivamente:

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Ejercer la odontología al graduarse.						

32) Las fortalezas en el plan de estudios en que estudio son:

_____
_____
_____
_____

33) Las debilidades en el plan de estudios en que estudio son:

_____
_____
_____
_____

Gracias

Appendix I

Practicing Dentists Survey English Version

Department of Educational Leadership, Research and Technology

PRACTICING DENTISTS SURVEY

This survey is only for recent dental graduate 0-5 years. (My inclusion criteria for dental graduates specifies this range).

"The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Graduates, Faculty and Industry Professionals in The Dominican Republic".

Section 1

I-Please provide the following general information about yourself.

1)Age_____

2)Gender

a)Male ☐

b)Female ☐

3)I graduated from

a)UNIBE	
b)UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e)UOD	
f)UFHEC	
g)UNIREMHOS	
h)UASD	
i)UCE	
j) UCATECI	
k) UCNE	
l)UTESA.	

4)Years of Graduated

a)b)0
c)1
d)2
e)3
f)4
g)5

Other_____

5) Direction: Please Select all that apply.

a)I practice.	Yes	No
b)I have my own dental clinic.	Yes	No
c)I work in the public sector.	Yes	No
d)I work in the private sector.	Yes	No
☐ ☐ ☐ ☐ e)I am also a Faculty	Yes	No

6)Taken any continual education courses since graduation.

a)Yes
b)No

7) If you have taken any continual education courses please indicate _____

Section 2

This section is about the acquisition of Competencies

8) Critical Thinking and Problem Solving.

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Estimate and integrate emergent trends in health care.						
b)Use critical thinking skills						
c) Solve problems in different circumstances						
d)Distinguish the difficulties in a problem						
c)Detect strengths and weaknesses of situations.						
f)Implement the most appropriate option to the resolution of a problem						

9)Self-Directed Learning and Health Care Promotion

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Seek out continued education						
b) Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.						
c)Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in the delivery of care.						
d)Identify risk factors that can affect individuals and the population.						
e) Respect the beliefs and preferences of all patients.						

10) Communication and interpersonal skills

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.						
b)Apply psychosocial and social principles in patient- centered health care						
c)Talk with individuals from diverse populations						
e) Make decisions even when conditions are uncertain.						

11) Practice Management and Informatics

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Evaluate and apply contemporary and emerging information						
b)Evaluate and manage contemporary models of oral health care management						
c)Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.						

d)Demonstrate effective business, financial management, and human resource skills						
e)Understand quality assurance and assessment concepts						

12) Patient Care
Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Address the needs of the patient as a ~~complete~~ human being.						
b)Facilitate consultation and referrals with all relevant health care providers						
c)Manage medical emergencies by using professional judgment						
d)Provide basic life support and utilize CPR knowledge when needed.						
e)Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects						

13) Evidence-Based Dentistry (EBD)
Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Recognize risk factors that require intervention to prevent disease						

b)Understand the meaning of Evidence-Based Dentistry						
c)Evaluate and integrate the best research outcomes with clinical expertise						
d)Implement strategies for specific patient care scenarios						
e)Implement a systematic strategy for finding evidence						

14) Establishment and maintenance of oral health.
Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Provide prevention, intervention, and educational strategies						
b)Participate with dental team members and other health care professionals in the management and health promotion for all patients						
c)Recognize and appreciate the need to contribute to the improvement of patients oral health						
d)Capacity to evaluate treatment and its outcomes						
e)Integrates the informed consent as a common practice						
f)Utilize universal infection control guidelines for all clinical procedures						

g)Obtain and interpret patient medical data, including a thorough intra/extra oral examination						
h)Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care						
i)Prevent, recognize, and manage medical and dental emergencies						

15) Professionalism

Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Apply ethical and legal standards in the provision of dental care						
b)Consult with or refer to professional colleagues when indicated						
c)Demonstrate business, financial management, and human resource skills						
d)Provide quality assurance when treating patients						
e)Display professional behavior						
f)Consider a patient's well being						

g)Possess patient's examination skills						
i)Control patient's pain and anxiety						

16)Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Think in a critical way						
b) Seek solutions for problems						
c)Learn subjects on my own						
d)Promote patient's health care						
e)Communicate with patients						
f)Demonstrate that I am a professional						
g)Manage my office businesses, finances, and human resources						
h)Take care of my patient						
i)Establish patient's oral health						
j)Maintain patient's oral health						
k)Implement principles of evidence-based dentistry						
l)Plan and make decisions						

17) Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.
Rate your level of confidence for the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Prevent, diagnose and mange periodontal diseases						
b)Manage the oral health care of children and adolescents						
c)Manage the oral health care of adults.						
d)Manage restorative procedures that preserve tooth structure, maintain function and esthetic						
e)Diagnose, identify and manage pulpal and peri-radicular diseases						

18) Oral Surgery, Prosthodontics, Dental Public Health.
Rate your level of confidence for being able to do the following.

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Diagnose and manage oral surgical treatment needs						
b)Replace missing or defective tooth structure, maintaining function and esthetics						
c)Evaluate outcomes of comprehensive dental care						
d)Diagnose and manage developmental occlusal abnormalities						

e)Prevent, diagnose and manage temporomandibular disorders						
f)Manage the replacement of teeth for the partially or complete edentulous patient						
g) Communicate and collaborate with groups and individuals with oral health issues						
h)Promote good oral health habits in individuals and communities						

19) Cariology, Orthodontics

Rate your level of confidence for being able to do the following.

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Prevent and control dental caries						
b)Develop strategies of assessment and management of dental caries						
c)Understand Anatomy and Craneo-facial growth and its relation with children's development						
d)Implement Preventive and Interceptive Orthodontic						
e)Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics						

20) Rate your level of confidence for being able to do the following. Practice effectively:

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Restorative dentistry						
b) Endodontics						
c)Oral surgery						
d)Preventive dentistry						
e) Orthodontics						
f) Periodontics						
g) Prosthodontics						
h)Cariology						
i)Public Health						

Section 4

Dental Curriculum Component (Teaching strategies, preclinical/ clinical hours, community service, Evidence –based dentistry)

Indicate if your level of agreement with:

21) My dental curriculum implements preclinical courses for these dental areas

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Dental Anatomy						
b)Operative dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if your level of agreement with:

22) The hours that my dental curriculum implements in preclinical courses for these dental areas were enough to teach me how to treat patients

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Dental Anatomy						
b)Operative						

dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if your level of agreement with:
23) My Professors have taught me how to effectively

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Solve problems						
b)Implementing best patient's treatments considering benefits and harms of alternative care options						
c)Think in a critical way						
d)Seek solutions to cases						
e) Conducting dental research						
f) Systematic reviews of the literature in any of my dental courses.						
g) Implementing best patient's treatments considering benefits and harms of alternative care options						

Indicate if your level of agreement with:
24) The community service of my dental curriculum prepared effectively to

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Being engaged in the community and strive to make it a better place						
b)To appreciate the influence of social, cultural,						

and economic forces on oral health care						
c) Health Promotion						
d) To understand and cooperate to Local and Global Public Health						
e) Experiences in Community Health as part of my dental curriculum						
f) Extracurricular experiences in community health during my life as student						

Indicate if your level of agreement with:
Teaching strategies
25) Overall the teaching strategies my professors used to teach me were motivating and enriching

1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree

Indicate if your level of agreement with:
26) The strategies my professors used to teach me include:

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a) Cases to Solve problems						
b) Lectures						
c) I learned to record videos						
d) I had to do reflective journals						
e) brain storming						
f) Video tutorials of any material taught						
g) Technology such as WhatsApp chat, face book, google docs, etc						
h) Online classes						
i) Cooperative learning						
j) preclinical sessions						
k) Perform clinical rotations to help students who are working in the clinical areas						

l) Attend to conventions and extracurricular courses outside or inside the university						
m) Doing posters						

Preparation
Indicate if your level of agreement with:
27) The clinical practices in these areas prepared effectively to treat patients

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Diagnostics						
b)Operative dentistry						
c) pediatric Dentistry						
e) Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Cariology						
j) Public health						

28) Preparation
Indicate if your level of agreement with:
I perceive I can effectively

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Practice dentistry when I graduate						

29)The strengths in my dental curriculum are

_____
_____
_____
_____

30)The weaknesses in my dental curriculum are

_____
_____
_____
_____

Thank you

Appendix I-1

Practicing Dentists Survey Spanish Version

Departamento de liderazgo educativo, investigación y tecnología.

Encuesta a Egresados

"La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados, docentes y profesionales de la odontología en la República Dominicana"

Sección 1

I-Por favor proporcione la siguiente información general sobre usted:

1) Edad_____

2) Sexo

a)Masculino
b)Femenino

3) Me gradue en la siguiente universidad

a) UNIBE	
b) UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i)UCE	
j) UCATECI	
k) UCNE	

4) Tengo de graduado

a)0
b)1
c)2
d)3
3)4
4) 5

Other_____

5) Dirección: Por favor seleccione todas las que aplique.

a)Estoy ejerciendo actualmente.	Yes	No
b)Tengo mi propio consultorio.	Yes	No
c)Trabajo para salud pública o el sector público.	Yes	No
d)Trabajo en una clínica privada.	Yes	No
e)Soy docente e una escuela de Odontología	Yes	No

6) He tomado algún curso de educación continua desde que me gradué.

a)Yes
b)No

7) En caso hay tomado algún curso especifique _____

Sección 2

Dirección:

La siguiente sección corresponde a la adquisición de competencias durante tu educación dental.

9) Pensamiento crítico y resolución de problemas.

Califique su nivel de confianza sobre:

Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Integrar las tendencias emergentes en el cuidado de la salud oral						
b)Poseer un pensamiento critico						
c) Solucionar problemas en diferentes circunstancias						
d) Distinguir las dificultades en un problema						
c)Detectar las fortalezas y debilidades de las situaciones que se presenten						
f) Implementar las opciones más apropiadas en la resolución de un problema.						

10) Aprendizaje auto-dirigido y promoción de la salud

Califique su nivel de confianza sobre:

Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Mantenerse estudiando continuamente (o renovando conocimientos)						
b) Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						

c) Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
d) Identificar los factores de riesgo que pueden afectar a las personas y la población.						
e) Respeta las creencias y preferencias de todos los pacientes.						

11) Comunicación y habilidades interpersonales
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
b) Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
c) Hable con personas de diversas poblaciones						

e) Toma decisiones aun cuando las condiciones son inciertas.						

12) Administración de consultorio and Informática
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Evaluar y aplicar información contemporánea y emergente						
b) Evaluar y gestionar modelos contemporáneos de gestión de la atención de la salud bucal						
c) Comprenden los principios del manejo riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
d) Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
e) Entender los conceptos para asegurar la calidad del tratamiento y manejo el bue manejo de los pacientes.						

13) Atención al paciente

Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Abordar las necesidades del paciente como un ser humano completo.						
b)Facilitar consultas y referimientos con los especialistas relevantes						
c) Manejar emergencias médicas usando juicio profesional						
d) Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
e) Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

14) Odontología basada en la evidencia (OBE)
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						

b) Comprender el significado de la odontología basada en la evidencia						
c) Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
d) Implementar estrategias para escenarios específicos de atención al paciente						
e) Implementar una estrategia sistemática para encontrar evidencia.						

15) Establecimiento y mantenimiento de la salud bucal.
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Proporcionar estrategias de prevención, intervención y educación						
b) Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
c) Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
d) Capacidad para evaluar el tratamiento y sus resultados						

e) Integra el consentimiento informado como práctica común						
f) Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
g) Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
h) Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						
i) Prevenir, reconocer y manejar emergencias médicas y dentales						

16) Profesionalismo
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Aplicar estándares éticos y legales en el suministro de cuidado dental						

b) Consultar o referir a colegas profesionales cuando esté indicado						
c) Demostrar habilidades comerciales, de gestión financiera y de recursos humanos						
d) Proporcionar garantía de calidad al tratar pacientes						
e) Mostrar comportamiento profesional						
f) Considerar el bienestar de un paciente						
g) Poseer habilidades para el examen del paciente						
i) Controlar el dolor y la ansiedad del paciente						

17) Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Pensar de una manera crítica						
b) Buscar soluciones a problemas						
c)Aprender sobre tópicos por su cuenta						
d)Promover la atención médica del paciente						
e)Comunicarse con los pacientes						
f)Demostrar que es un profesional						
g) Administrar los negocios, las						

finanzas y los recursos humanos de su oficina						
h) Cuidar del paciente						
i)Establecer la salud oral del paciente						
j) Mantener la salud oral del paciente						
k) Implementar principios de odontología basada en la evidencia.						
l) Planificar y tomar decisiones						

Sección 3

Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

18) Periodoncia, Odontopediatría, Odontología restauradora, Endodoncia.
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Prevenir, diagnosticar y tratar enfermedades periodontales						
b) Manejar la atención de salud oral de niños, adolescentes						
c) Manejar la atención de salud oral de los adultos						
d) Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
e) Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

19) Cirugía Oral, Prostodoncia, Salud Pública Dental.
Califique su nivel de confianza sobre:

Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico oral						
b) Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
c) Evaluar los resultados de la atención dental integral						
d)Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
e) Prevenir, diagnosticar y tratar trastornos temporomandibulares						
f) Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
g) Comunicarse y colaborar con grupos e individuos con problemas de salud oral						
h) Promover buenos hábitos de salud oral en individuos y comunidades.						

20) Cariologia, Ortodoncia
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Prevenir y controlar la caries						

dental						
b) Desarrollar estrategias de evaluación y manejo de la caries dental						
c) Comprender la anatomía y el crecimiento cráneo-facial y su relación con el desarrollo infantil						
d) Implementar Ortodoncia Preventiva e Interceptiva						
e) Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

21)
Califique su nivel de confianza sobre:
Yo puedo efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Odontología Restauradora						
b) Endodoncia						
c) Cirugía Oral						
d) Odontología Preventiva						
e) Ortodoncia						
f) Periodoncia						
g) Prostodoncia						

Componente del currículo dental (estrategias de enseñanza, horas preclínicas / clínicas, servicio comunitario, odontología basada en la evidencia)

Indique si está de acuerdo en lo siguiente.
22) El plan de estudios dental en que estudie implementa cursos preclínicos para estas áreas dentales

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Anatomía Dental						
b) Odontología Restauradora						
c) Anestesia Dental						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Biomateriales						

Indique si está de acuerdo en lo siguiente.
23) Las horas que implementa mi plan de estudios odontológicos en los preclínicos para estas áreas dentales fueron suficientes para enseñarme cómo tratar a los pacientes

	1= muy en desacuerdo	2= En desacuerdo	3=Ligera mente en desacuerd o	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a)Anatomía Dental						
b) Odontología Restauradora						
c)Anestesia Dental						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Biomateriales						

Indique si está de acuerdo en lo siguiente.
24) Las sesiones preclínicas en estas áreas me prepararono de manera efectiva como un futuro dentista

	1= muy en desacuerdo	2= En desacuerdo	3=Ligera mente en desacuerd o	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Anatomía Dental						
b) Odontología Restauradora						
c)Anestesia Dental						
e)Endodoncia						
f)Prostodoncia						
g)Periodoncia						
h) Cirugía Oral						
i)Biomateriales						

Indique si está de acuerdo en lo siguiente.
25) El plan de estudios odontológicos donde estudie dedica tiempo para preparar a los estudiantes de odontología de manera efectiva en estas áreas

	1= muy en desacuerdo	2= En desacuerdo	3=Ligera mente en desacuerd o	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Llevar a cabo investigaciones dentales						
b) Revisiones sistemáticas de la literatura en cualquiera de las clases para mantenernos actualizado.						

c) Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos.						

Indique si está de acuerdo en lo siguiente.
26) Mis profesores me enseñaron cómo

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Solucionar problemas						
b) Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos						
c) Pensar de manera critica						
d) Buscar soluciones a caso						

Indique si está de acuerdo en lo siguiente.
27) El servicio comunitario de mi plan de estudios dental me preparo efectivamente para

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Estar comprometido con la comunidad y esforzarse para que sea un lugar mejor						
b) Apreciar la influencia de las fuerzas sociales, culturales y económicas en el cuidado de la salud oral						
c) Promoción de la salud						
d) Comprender y cooperar con la Salud Pública Local y Global						

e) Experiencias en salud comunitaria como parte del plan de estudios dental						
f) Experiencias extracurriculares en salud comunitaria durante la vida como estudiante						

Indique si está de acuerdo en lo siguiente.
Estrategias de enseñanzas
28) En general, considero que las estrategias de enseñanza que han usado para ensenarme fueron motivadoras y enriquecedoras

1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo

Indique si está de acuerdo en lo siguiente.
29) Las estrategias que utilizaron para enseñarme incluyen:

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Resolución de casos						
b)Asistir a conferencias						
c) Realizar videos						
d) Realizar diarios reflexivos						
e) Lluvia de ideas						
f) Tutoriales con temas mostrados en clase						
g) Uso de la tecnología tales como chat de whatsapp, facebook, google docs, etc.						
h) Clases virtuales						
i) Aprendizaje cooperativo						
j) Preclínicos						
k) Ayudantías clínicas, de los diversos trabajos que se realizan en la clínica dental.						
l) Participación en						

congresos y cursos extracurriculares fuera o dentro de la universidad						
m) Elaboración de posters						

Formación
Indique si está de acuerdo en lo siguiente.
30) Las prácticas clínicas en estas áreas me prepararon eficazmente para tratar a los pacientes

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Diagnostico						
b) Odontología restauradora						
c) Odontopediatría						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Cariología						

31) Formación
Indique si está de acuerdo en lo siguiente.
Yo percibo que puedo efectivamente:

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Ejercer la odontología al graduarse.						

32) Las fortalezas en el plan de estudios en que estudie son:

_____
_____
_____
_____

33) Las debilidades en el plan de estudios en que estudie son:

_____
_____
_____
_____

Gracias

Appendix J

Faculty Survey English Version

Department of Educational Leadership, Research and Technology

FACULTY SURVEY.

"The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Graduates, Faculty and Industry Professionals in The Dominican Republic".

Section 1

_I-Please provide the following general information about yourself.

1) Age_____

2) Gender

a)Male
b)Female

3)Years Teaching _____

4) Years of Graduated _____

5) I am: Please select all that apply**.**

a)General Dentist	
b)Medical Doctor	
c)Postgraduate	
d)Master Degree	
e)PhD	

6) I teach currently at: In case you teach in several universities, please select only in the one you give more hours.

a) UNIBE	
b) UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i) UCE	
j) UCATECI	
k) UCNE	
l)UTESA.	

7) Direction: Please, select all that apply.

I currently:

a)Practice.	Yes	No
b)Teach	Yes	No

8) My specialty is. Select all that apply.

a)Operative Dentistry	
b)Prosthodontics	
c)Endodontics	
d)Periodontics	
e)Public Health	
f)Oral Surgery	
g)Oral and Maxillo Facial Surgery	
h)Pediatric Dentistry	

i)Forensic Dentistry	
j)Oral Pathology	
k)Orthodontics	
l)Implantology	
m)Master in Higher Education	
n)PHD	
d)None	

Section 2

Direction:

The following section is about the Acquisition of Competencies during student's dental education.

9) Critical Thinking and Problem Solving.

Rate your level of confidence for your students being able to do the following.

My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Estimate and integrate emergent trends in health care.						
b)Use critical thinking skills						
c) Solve problems in different circumstances						
d)Distinguish the difficulties in a problem						
c)Detect strengths and weaknesses of situations.						
f)Implement the most appropriate option to the resolution of a problem						

10)Self-Directed Learning and Health Care Promotion

Rate your level of confidence for your students being able to do the following.

My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Seek out continued education						
b) Implement strategies to health promotion and prevention of						

oral diseases by educating individuals and communities						
c)Apply standard precautions and use diverse methods that ensure the wellness and security of the patient and the oral health professional in the delivery of care.						
d)Identify risk factors that can affect individuals and the population.						
e) Respect the beliefs and preferences of all patients.						

11) Communication and interpersonal skills
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.						
b)Apply psychosocial and social principles in patient-centered health care						
c)Talk with individuals						

from diverse populations						
e) Make decisions even when conditions are uncertain.						

12) Practice Management and Informatics
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Evaluate and apply contemporary and emerging information						
b)Evaluate and manage contemporary models of oral health care management						
c)Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.						
d)Demonstrate effective business, financial management, and human resource skills						
e)Understand quality assurance and assessment concepts						

13) Patient Care
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident

a) Address the needs of the patient as a human being.						
b)Facilitate consultation and referrals with all relevant health care providers						
c)Manage medical emergencies by using professional judgment						
d)Provide basic life support and utilize CPR knowledge when needed.						
e)Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects						

14) Evidence-Based Dentistry (EBD)
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Recognize risk factors that require intervention to prevent disease						
b)Understand the meaning of Evidence-Based Dentistry						
c)Evaluate and integrate the best research						

outcomes with clinical expertise						
d)Implement strategies for specific patient care scenarios						
e)Implement a systematic strategy for finding evidence						

15) Establishment and maintenance of oral health.
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Provide prevention, intervention, and educational strategies						
b)Participate with dental team members and other health care professionals in the management and health promotion for all patients						
c)Recognize and appreciate the need to contribute to the improvement of patients oral health						
d)Capacity to evaluate treatment and its outcomes						
e)Integrates the informed consent as a common practice						

f)Utilize universal infection control guidelines for all clinical procedures						
g)Obtain and interpret patient medical data, including a thorough intra/extra oral examination						
h)Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care						
i)Prevent, recognize, and manage medical and dental emergencies						

16) Professionalism
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a)Apply ethical and legal standards in the provision of dental care						
b)Consult with or refer to professional colleagues when indicated						
c)Demonstrate business, financial management, and human resource skills						

d)Provide quality assurance when treating patients						
e)Display professional behavior						
f)Consider a patient's well being						
g)Possess patient's examination skills						
i)Control patient's pain and anxiety						

17) Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	**2=Only slightly confident**	**3=Somewhat confident**	**4=Moderately confident**	**5=Strongly confident**	**6=100% confident**
a) Think in a critical way						
b) Seek solutions for problems						
c)Learn subjects on their own						
d)Promote patient's health care						
e)Communicate with patients						
f)Demonstrate that he/she is a professional						
g)Manage his/her office businesses, finances, and human resources						
h)Take care of his/her patient						
i)Establish						

patient's oral health						
j)Maintain patient's oral health						
k)Implement principles of evidence-based dentistry						
l)Plan and make decisions						

Section 3

Demonstration of Dental Practice Clinical Skills in Several Areas of Dentistry

18) Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.

Rate your level of confidence for the following.

My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Prevent, diagnose and mange periodontal diseases						
b)Manage the oral health care of children and adolescents						
c)Manage the oral health care of adults.						
d)Manage restorative procedures that preserve tooth structure, maintain function and are esthetic						
e)Diagnose, identify and manage pulpal and peri-radicular diseases						

19) Oral Surgery, Prosthodontics, Dental Public Health.
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Diagnose and manage oral surgical treatment needs						
b)Replace missing or defective tooth structure, maintaining function and esthetics						
c)Evaluate outcomes of comprehensive dental care						
d)Diagnose and manage developmental occlusal abnormalities						
e)Prevent, diagnose and manage temporomandibular disorders						
f)Manage the replacement of teeth for the partially or complete edentulous patient						
g) Communicate and collaborate with groups and individuals with oral health issues						
h)Promote good oral health habits						

in individuals and communities						

20) Cariology, Orthodontics
Rate your level of confidence for the following.
My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a)Prevent and control dental caries						
b)Develop strategies of assessment and management of dental caries						
c)Understand Anatomy and Craneo-facial growth and its relation with children's development						
d)Implement Preventive and Interceptive Orthodontic						
e)Diagnose and manage the indications and contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics						

21) Rate your level of confidence in the following.
My students can effectively

	1=Not at all confident	2=Only slightly confident	3=Somewhat confident	4=Moderately confident	5=Strongly confident	6=100% confident
a) Restorative dentistry						
b) Endodontics						
c)Oral surgery						
d)Preventive						

dentistry						
e) Orthodontics						
f) Periodontics						
g) Prosthodontics						
i) Cariology						
j) Public Health						

Section 4

Dental Curriculum Component (Teaching strategies, preclinical/ clinical hours, community service, Evidence –based dentistry)

Indicate if you are agreeing in the following.

22)The dental curriculum where I teach implements preclinical courses for these dental areas

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Dental Anatomy						
b)Operative dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if you are agreeing in the following.

23) The hours that my dental curriculum implements in preclinical courses for these dental areas were enough to teach my students how to treat patients

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Dental Anatomy						
b)Operative dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if you are agreeing in the following.
24) The preclinical sessions in these areas prepared my students effectively as a future dentist

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Dental Anatomy						
b)Operative dentistry						
c)Dental Anesthesia						
e)Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Biomaterials						

Indicate if you are agreeing in the following.
25) The dental curriculum where I teach dedicates time to prepare the dental students effectively in these areas

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a) Conducting dental research						
b) To do systematic reviews of the literature in any of the dental courses that are taught.						
c) Implementing best patient's treatments considering benefits and harms of alternative care options						

Indicate if you are agreeing in the following.
26) As a Professors I have taught to my students how to effectively

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree

a)Solve problems						
b)Implementing best patient's treatments considering benefits and harms of alternative care options						
c)Think in a critical way						
d)Seek solutions to cases						

Indicate if you are agreeing in the following.
27) The community service of my dental curriculum prepared effectively to

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Being engaged in the community and strive to make it a better place						
b)To appreciate the influence of social, cultural, and economic forces on oral health care						
c) Health Promotion						
d) To understand and cooperate to Local and Global Public Health						
e) Experiences in Community Health as part of my dental curriculum						
f) Extracurricular experiences in community health during my life as student						

Indicate if you are agreeing in the following.
Teaching strategies
28) Overall, I consider that the teaching strategies That I used to teach are motivating and enriching for my students

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree

Indicate if you are agreeing in the following.
29) The strategies that I use to teach include:

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a) Cases to Solve problems						
b) Lectures						
c) Making or recording/ or creating videos						
d) I had to do reflective journals						
e) brain storming						
f) Video tutorials of any material taught						
g) Use of echnology such as WhatsApp chat, face book, google docs, etc						
h) Online classes						
i) Cooperative learning						
j) preclinical sessions						
k) Perform clinical rotations to help students who are working in the clinical areas						
l)Attend to conventions and extracurricular courses outside or inside the university						
m) Doing posters						

Preparation
Indicate if you are agreeing in the following.

30) The clinical practices in these areas prepare effectively students to treat patients

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Diagnostics						
b)Operative dentistry						
c) pediatric Dentistry						
e) Endodontics						
f)Prosthodontics						
g)Periodontics						
h)Oral Surgery						
i)Cariology						
j) Public Health						

31) Preparation
Indicate if you are agreeing in the following.
I perceive my students can effectively

	1=Strongly disagree	2=disagree	3=Slightly disagree	4=Slightly agree	5=agree	6=Strongly agree
a)Practice dentistry when I graduate						

32)The strengths in my dental curriculum are

_____
_____
_____
_____

33)The weaknesses in my dental curriculum are

_____
_____
_____
_____

Thank you

Appendix J-1

Faculty Survey Spanish Version

Departamento de liderazgo educativo, investigación y tecnología.

Encuesta Docentes

"La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados, docentes y profesionales de la odontología en la República Dominicana"

Sección 1

I-Por favor proporcione la siguiente información general sobre usted:

1) Edad_____

2) Sexo

a)Masculino ☐

b)Femenino ☐

3) Años de docencia: _____

4) Años de graduado (a): _____

5) Soy: Seleccione todas las opciones que aplica.

a) Odontólogo general	
b) Doctor en Medicina	
c) Postgrado	
d) Maestría	
e) PhD	

6) Actualmente soy docente de: En caso de que esté en varias universidades, seleccione solo en la que tenga más horas de docencia.

a) UNIBE	
b) UNPHU	
c) PUCMM (Santo Domingo)	
d) PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i) UCE	
j) UCATECI	
k) UCNE	
l) UTESA	

7) Dirección: Seleccione todas las opciones que correspondan.

Actualmente trabajo en:

a) Práctica Odontológica	Si	No
b) Docencia	Si	No

8) Especialidad en: Seleccione todas las que correspondan.

a) Odontología Restauradora	
b) Prostodoncia	
c) Endodoncia	
d) Periodoncia	
e) Salud Pública	
f) Cirugía Oral	

g) Cirugía maxilo facial y Oral	
h) Odontopediatria	
i) Odontología Forense	
J) Patología oral	
k) Ortodoncia	
l) Implantologia	
m) Maestría en Educación Superior	
n) Ph. D.	
d) Ninguno	

Sección 2

Dirección:

La siguiente sección corresponde a la adquisición de competencias durante la educación dental del estudiante.

9) Pensamiento crítico y resolución de problemas.

Califique su nivel de confianza sobre:

Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Integrar las tendencias emergentes en el cuidado de la salud oral						
b)Poseer un pensamiento critico						
c) Solucionar problemas en diferentes circunstancias						
d) Distinguir las dificultades en un problema						
c)Detectar las fortalezas y debilidades de las situaciones que se presenten						
f) Implementar las opciones más apropiadas en la resolución de un problema.						

10) Aprendizaje auto-dirigido y promoción de la salud
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Mantenerse estudiando continuamente (o renovando conocimientos)						
b) Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
c) Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
d) Identificar los factores de riesgo que pueden afectar a las personas y la población.						
e) Respeta las creencias y preferencias de todos los pacientes.						

11) Comunicación y habilidades interpersonales
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
b) Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
c) Hable con personas de diversas poblaciones						
e) Toma decisiones aun cuando las condiciones son inciertas.						

12) Administración de consultorio and Informática
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Evaluar y aplicar información contemporánea y emergente						
b) Evaluar y gestionar modelos contemporáneos						

de gestión de la atención de la salud bucal						
c) Comprenden los principios del manejo riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
d) Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
e) Entender los conceptos para asegurar la calidad del tratamiento y manejo el bue manejo de los pacientes.						

13) Atención al paciente
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Abordar las necesidades del paciente como un ser humano completo.						
b)Facilitar consultas y referimientos con los especialistas relevantes						
c) Manejar emergencias médicas usando						

juicio profesional						
d) Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
e) Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

14) Odontología basada en la evidencia (OBE)
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
b) Comprender el significado de la odontología basada en la evidencia						
c) Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
d) Implementar estrategias para escenarios específicos de atención al						

paciente						
e) Implementar una estrategia sistemática para encontrar evidencia.						

15) Establecimiento y mantenimiento de la salud bucal.
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Proporcionar estrategias de prevención, intervención y educación						
b) Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
c) Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
d) Capacidad para evaluar el tratamiento y sus resultados						
e) Integra el consentimiento informado como práctica común						
f) Utilizar las guías universales de control de						

infecciones para todos los procedimientos clínicos						
g) Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
h) Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						
i) Prevenir, reconocer y manejar emergencias médicas y dentales						

16) Profesionalismo
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Aplicar estándares éticos y legales en el suministro de cuidado dental						
b) Consultar o referir a colegas profesionales cuando esté indicado						
c) Demostrar habilidades comerciales, de gestión financiera y de						

recursos humanos						
d) Proporcionar garantía de calidad al tratar pacientes						
e) Mostrar comportamiento profesional						
f) Considerar el bienestar de un paciente						
g) Poseer habilidades para el examen del paciente						
i) Controlar el dolor y la ansiedad del paciente						

17) Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Pensar de una manera crítica						
b) Buscar soluciones a problemas						
c)Aprender sobre tópicos por su cuenta						
d)Promover la atención medica del paciente						
e)Comunicarse con los pacientes						
f)Demostrar que es un profesional						
g) Administrar los negocios, las finanzas y los						

recursos humanos de su oficina						
h) Cuidar del paciente						
i)Establecer la salud oral del paciente						
j) Mantener la salud oral del paciente						
k) Implementar principios de odontología basada en la evidencia.						
l) Planificar y tomar decisiones						

Sección 3

Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

18) Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia.

Califique su nivel de confianza sobre:

Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Prevenir, diagnosticar y tratar enfermedades periodontales						
b) Manejar la atención de salud oral de niños, adolescentes						
c) Manejar la atención de salud oral de los adultos						
d) Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						

e) Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

19) Cirugía Oral, Prostodoncia, Salud Publica Dental.
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico oral						
b) Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
c) Evaluar los resultados de la atención dental integral						
d)Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
e) Prevenir, diagnosticar y tratar trastornos temporomandibulares						
f) Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
g) Comunicarse						

y colaborar con grupos e individuos con problemas de salud oral						
h) Promover buenos hábitos de salud oral en individuos y comunidades.						

20) Cariologia, Ortodoncia
Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Prevenir y controlar la caries dental						
b) Desarrollar estrategias de evaluación y manejo de la caries dental						
c) Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
d) Implementar Ortodoncia Preventiva e Interceptiva						
e) Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

21)

Califique su nivel de confianza sobre:
Mis estudiantes pueden efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Odontología Restauradora						
b) Endodoncia						
c) Cirugía Oral						
d) Odontología Preventiva						
e) Ortodoncia						
f) Periodoncia						
g) Prostodoncia						

Sección 4
Componente del currículo dental (estrategias de enseñanza, horas preclínicas / clínicas, servicio comunitario, odontología basada en la evidencia)

Indique si esta de acuerdo en lo siguiente.
22) El plan de estudios dental donde enseño implementa cursos preclínicos para estas áreas dentales

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Anatomía Dental						
b) Odontología Restauradora						
c) Anestesia Dental						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Biomateriales						

Indique si esta de acuerdo en lo siguiente.
23) Las horas que implementa mi plan de estudios odontológicos en los preclínicos para estas áreas dentales fueron suficientes para enseñar a mis alumnos cómo tratar a los pacientes

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a)Anatomía Dental						
b) Odontología Restauradora						
c)Anestesia Dental						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Biomateriales						

Indique si esta de acuerdo en lo siguiente.
24) Las sesiones preclínicas en estas áreas prepararon a mis estudiantes de manera efectiva como un futuro dentista

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Anatomía Dental						
b) Odontología Restauradora						
c)Anestesia Dental						
e)Endodoncia						
f)Prostodoncia						
g)Periodoncia						
h) Cirugía Oral						
i)Biomateriales						

Indique si esta de acuerdo en lo siguiente.
25) El plan de estudios odontológicos donde enseño dedica tiempo para preparar a los estudiantes de odontología de manera efectiva en estas áreas

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Llevar a cabo investigaciones dentales						
b) Revisiones sistemáticas de la literatura en cualquiera de las clases para mantenernos actualizado.						
c) Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos.						

Indique si esta de acuerdo en lo siguiente.
26) Como profesores, he enseñado a mis alumnos a cómo

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a)Solucionar problemas						
b) Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos						
c) Pensar de manera critica						
d) Buscar soluciones a caso						

Indique si esta de acuerdo en lo siguiente.
27) El servicio comunitario de mi plan de estudios dental se preparó efectivamente para

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Estar comprometido con la comunidad y esforzarse para que sea un lugar mejor						
b) Apreciar la influencia de las fuerzas sociales, culturales y económicas en el cuidado de la salud oral						
c) Promoción de la salud						
d) Comprender y cooperar con la Salud Pública Local y Global						

e) Experiencias en salud comunitaria como parte del plan de estudios dental						
f) Experiencias extracurriculares en salud comunitaria durante la vida como estudiante						

Indique si está de acuerdo en lo siguiente.
Estrategias de enseñanzas
28) En general, considero que las estrategias de enseñanza que enseno son motivadoras y enriquecedoras para mis estudiantes

1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo

Indique si está de acuerdo en lo siguiente.
29) Las estrategias que uso para enseñar incluyen:

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Resolución de casos						
b)Asistir a conferencias						
c) Realizar videos						
d) Realizar diarios reflexivos						
e) Lluvia de ideas						
f) Tutoriales con temas mostrados en clase						
g) Uso de la tecnología tales como chat de whatsapp, facebook, google docs, etc.						
h) Clases virtuales						

i) Aprendizaje cooperativo						
j) Preclínicos						
k) Ayudantías clínicas, de los diversos trabajos que se realizan en la clínica dental.						
l) Participación en congresos y cursos extracurriculares fuera o dentro de la universidad						
m) Elaboración de posters						

Formación
Indique si esta de acuerdo en lo siguiente.
30) Las prácticas clínicas en estas áreas preparan eficazmente a los estudiantes para tratar a los pacientes

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Diagnostico						
b) Odontología restauradora						
c) Odontopediatría						
e) Endodoncia						
f) Prostodoncia						
g) Periodoncia						
h) Cirugía Oral						
i) Cariología						

31) Formación
Indique si esta de acuerdo en lo siguiente.
Yo percibo que mis estudiantes pueden efectivamente:

	1= muy en desacuerdo	2= En desacuerdo	3=Ligeramente en desacuerdo	4= Ligeramente de acuerdo	5= de acuerdo	6=muy de acuerdo
a) Ejercer la odontología al graduarse.						

32) Las fortalezas en mi curriculum son:

_____
_____
_____
_____

33) Las debilidades en mi curriculum son:

_____
_____
_____
_____

Gracias

Appendix K

Industry Professionals Survey English Version

Department of Educational Leadership, Research and Technology

Industry Professionals SURVEY.

"The Acquisition of Dental Competencies and Clinical Skills: Perceptions from Students, Graduates, Faculty and Industry Professionals in The Dominican Republic".

Section 1

I-Please provide the following general information about yourself.

1)Age_____

2)Gender

a) Male ☐

b) Female ☐

3)I am: Please select all that apply**.**

a)General Dentist	
b)Medical Doctor	
c)Postgraduate	
d)Master Degree	
e)PhD	

4)I hire or/and supervise dentists at: Please select all that apply to you.

a)Ameridент	
b)Salud Bucal	
c)Odontodom	
d)Odontotec	
e)Orthoral	
f)Hospital	
g)Dental Clinic	

5)Direction: Please Select all that apply.

a)I am a dentist	Yes	No
b)I Teach	Yes	No

6)My specialty is. Select all that apply.

a)Operative Dentistry	
b)Prosthodontics	
c)Endodontics	
d)Periodontics	
e)Public Health	
f)Oral Surgery	
g)Oral and Maxillo Facial Surgery	
h)Pediatric Dentistry	
i)Forensic Dentistry	
j)Oral Pathology	
k)Orthodontics	
l)Implantology	
m)Master in Higher Education	
n)Master in Business Administration	
0)Business Administration	

7)I hire dentists from. Please select all that apply.

a) UNIBE	
b) UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i)UCE	
j) UCATECI	
k) UCNE	
l)UTESA	

Section 2

Direction:

The following section is related with the Competencies you have seeing dentists possess.

8) Critical Thinking and Problem Solving.

Rate your level of confidence ~~in~~ the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a) Estimate and integrate emergent trends in health care.						
b)Use critical thinking skills						
c)Solve problems in different circumstances						
d)Distinguish the difficulties in a problem						
e)Detect strengths and weaknesses of situations.						
f)Implement the most appropriate option to the resolution of a problem						

9) Self-Directed Learning and Health Care Promotion

Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a)Seek out continued education						
b) Implement strategies to health promotion and prevention of oral diseases by educating individuals and communities.						
c)Apply standard precautions and use diverse methods that ensure the wellness and						

security of the patient and the oral health professional in the delivery of care.						
d)Identify risk factors that can affect individuals and the population.						
e)Respect the beliefs and preferences of all patients.						

10) Communication and interpersonal skills
Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a) Use appropriate interpersonal and communication skills when communicating with patients, dental team members and other health care professionals.						
b)Apply psychosocial and social principles in patient-centered health care						
c)Talk with individuals from diverse populations						
d)Make decisions even when conditions are uncertain.						

11) Practice Management and Informatics
Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a)Evaluate and apply contemporary and emerging information						
b)Evaluate and manage contemporary models of oral health care management						
c)Understand principles of risk administration, including informed consent and appropriate record keeping in patient care.						
d)Demonstrate effective business, financial management, and human						

resource skills						
e)Understand quality assurance and assessment concepts						

12) Patient Care
Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a) Address the needs of the patient as a human being.						
b)Facilitate consultation and referrals with all relevant health care providers						
c)Manage medical emergencies by using professional judgment						
d)Provide basic life support and utilize CPR knowledge when needed.						
e)Differentiate the relationship between systemic disease, medications, and oral health that impact overall patient care and treatment effects						

13) Evidence-Based Dentistry (EBD)
Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a)Recognize risk factors that require intervention to prevent disease						
b)Understand the meaning of Evidence-Based Dentistry						
c)Evaluate and integrate the best research outcomes with clinical expertise						
d)Implement strategies for specific patient care scenarios						
e)Implement a systematic strategy for finding evidence						

14) Establishment and maintenance of oral health.
Rate your level of confidence in the following.

	Not at all confident	Only slightly confident	Somewhat confident	Moderately confident	Strongly confident	100% confident
a)Provide prevention, intervention, and educational strategies						
b)Participate with dental team members and other health care professionals in the management and health promotion for all patients						
c)Recognize and appreciate the need to contribute to the improvement of patients oral health						
d)Capacity to evaluate treatment and its outcomes						
e)Integrates the informed consent as a common practice						
f)Utilize universal infection control guidelines for all clinical procedures						
g)Obtain and interpret patient medical data, including a thorough intra/extra oral examination						
h)Identify the manifestation of systemic disease and how the disease and it's control may affect the delivery of dental care						
i)Prevent, recognize, and manage medical and dental emergencies						

15) Professionalism
Rate your level of confidence in the following.

	Not at all confident	Only slightly confident	Somewhat confident	Moderately confident	Strongly confident	100% confident
a)Apply ethical and legal standards in the provision of dental care						
b)Consult with or refer to professional colleagues when indicated						
c)Demonstrate business, financial management, and human resource skills						
d)Provide quality assurance when treating patients						
e)Display professional behavior						
f)Consider a patient's well being						
g)Possess patient's examination skills						
h)Control patient's pain and anxiety						

16) Rate your level of confidence in the following.

	Not at all confident	Only slightly confident	Somewhat confident	Moderately confident	Strongly confident	100% confident
a) Think in a critical way						
b) Solve Problems and seek solutions						
c) Learn subjects on my own						
d) Promote patient's health care						
e) Communicate with patients						
f) Demonstrate that I am a professional						

g) Manage my office businesses, finances, and human resources						
h) Take care of my patient						
i) Establish patient's oral health						
j) Maintain patient's oral health						
k) Implement principles of evidence-based dentistry						
l) Plan and make decisions						

Section 3

Demonstration of Clinical Skills in Several Areas of Dentistry

17) Periodontics, Pediatric Dentistry, Restorative Dentistry, Endodontics.

Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a)Prevent, diagnose and mange periodontal diseases						
b)Manage the oral health care of children, adolescents						
c)Manage the oral health care of adults.						
d)Manage restorative procedures that preserve tooth structure, maintain function and are esthetic						
e)Diagnose, identify and manage pulpal and peri-radicular diseases						

18) Oral Surgery, Prosthodontics, Dental Public Health.
Rate your level of confidence in the following.

	Not at all confident	Only slightly confident	Somewhat confident	Moderately confident	Strongly confident	100% confident
a) Diagnose and manage oral surgical treatment needs						
b) Replace missing or defective tooth structure, maintaining function and esthetics						
c) Evaluate outcomes of comprehensive dental care						
d) Diagnose and manage developmental occlusal abnormalities						
e) Prevent, diagnose and manage temporomandibular disorders						
f) Manage the replacement of teeth for the partially or completely edentulous patient						
g) Communicate and collaborate with groups and individuals on oral health issues						
h) Promote good oral health habits in individuals and communities						

19) Cariology, Orthodontics
Rate your level of confidence in the following.

	Not at all confident	Only slightly confident	Somewhat confident	Moderately confident	Strongly confident	100% confident
a)Prevent and control dental caries						
b)Develop strategies of assessment and management of dental caries						
c)Understand Anatomy and Craneo-facial growth and its relation with children's development						
d)Implement Preventive and Interceptive Orthodontic						
e)Diagnose and manage the indications and						

contraindications in regards basic treatment related with Preventive and Interceptive Orthodontics						

20) Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a) Restorative dentistry						
b) Endodontics						
c) Oral surgery						
d) Preventive dentistry						
e) Orthodontics						
f) Periodontics						
g) Prosthodontics						

21) Rate your level of confidence in the following.

	Not at all confident	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
a) Think in a critical way						
b) Solve Problems and seek solutions						
c) Learn subjects on my own						
d) Promote patient's health care						
e) Communicate with patients						
f) Demonstrate that I am a professional						
g) Manage my office businesses, finances, and human resources						
h) Take care of my patient						
i) Establish patient's oral health						
j)Maintain patient's oral health						
k)Implement principles of evidence-based dentistry						
l)Plan and make decisions						

Section 4
Dentist's University Preparation

Please select from which university you think the dentists you hire or supervise you perceive are most prepared.

22) Rate your level of confidence in the following.

a)UNIBE	**Not at all confident**	**Only slightly confident**	**Somewhat confident**	**Moderately confident**	**Strongly confident**	**100% confident**
UNPHU						
b) PUCMM (Santo Domingo)						
c)PUCMM (Santiago)						
d)UOD						
e) UFHEC						
f) UNIREMHOS						
g) UASD						
h) UCE						
i)UCATECI						
j) UCNE						
k) UTESA.						

Thank you

Appendix K-1

Industry Professionals Survey Spanish Version

Departamento de liderazgo educativo, investigación y tecnología.

Encuesta a Sector Empleador.

"La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados, docentes y profesionales de la odontología en la República Dominicana"

Sección 1

Por favor proporcione la siguiente información general sobre usted:

1) Edad_____

2) Sexo

a)Masculino ☐

b)Femenino ☐

3)I am: Please select all that apply.

a)General Dentist	
b)Medical Doctor	
c)Postgraduate	
d)Master Degree	
e)PhD	

4)I hire or/and supervise dentists at: Please select all that apply to you.

a)Ameridente	
b)Salud Bucal	
c)Odontodom	
d)Odontotec	
e)Orthoral	
f)Hospital	
g)Dental Clinic	

5)Direction: Please Select all that apply.

a)I am a dentist	Yes	No
b)I Teach	Yes	No

6)Mi especialidad es. Seleccione todas las que apliquen.

a)Operatoria o Dentistica.	
b)Rehabilitacion Oral.	
c)Endodoncia.	
d)Periodoncia.	
e)Salud Pública.	
f) Cirugía Oral.	
g)Cirugía Oral y Maxilo Facial.	
h)Odontología Pediátrica.	
i)Odontología Forense.	
j)Patología Oral.	
k)Orthodoncia.	
l)Implantología Oral.	
m)Masterein Educación Superior.	
n)Master en Administracion de Empresas.	
0) Administracion de Empresas.	

7)Yo superviso o empleo odontólogos de los siguientes lugares. Por favor, seleccione todas las que apliquen.

a) UNIBE	
b) UNPHU	
c)PUCMM (Santo Domingo)	
d)PUCMM (Santiago)	
e) UOD	
f) UFHEC	
g) UNIREMHOS	
h) UASD	
i)UCE	
j) UCATECI	
k) UCNE	
l)UTESA.	

Sección 2

Dirección:

La siguiente sección corresponde a la adquisición de competencias durante la educación dental .

8) Pensamiento crítico y resolución de problemas.

Califique su nivel de confianza sobre:

El Odontólogo puede efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Integrar las tendencias emergentes en el cuidado de la salud oral						
b) Poseer un pensamiento critico						
c) Solucionar problemas en diferentes circunstancias						
d) Distinguir las dificultades en un problema						
c) Detectar las fortalezas y debilidades de las situaciones que se presenten						
f) Implementar las opciones más apropiadas en la						

resolución de un problema.						

9) Aprendizaje auto-dirigido y promoción de la salud
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Mantenerse estudiando continuamente (o renovando conocimientos)						
b) Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
c) Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
d) Identificar los factores de riesgo que pueden afectar a las personas y la población.						
e) Respeta las creencias y preferencias de todos los pacientes.						

10) Comunicación y habilidades interpersonales
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
b) Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
c) Hable con personas de diversas poblaciones						
e) Toma decisiones aun cuando las condiciones son inciertas.						

11) Administración de consultorio and Informática
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Evaluar y aplicar información contemporánea y emergente						
b) Evaluar y gestionar modelos contemporáneos de gestión de la atención de la salud bucal						
c) Comprenden los principios del manejo riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros						

en la atención del paciente.						
d) Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
e) Entender los conceptos para asegurar la calidad del tratamiento y manejo el bue manejo de los pacientes.						

12) Atención al paciente
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Abordar las necesidades del paciente como un ser humano completo.						
b)Facilitar consultas y referimientos con los especialistas relevantes						
c) Manejar emergencias médicas usando juicio profesional						
d) Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
e) Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

13) Odontología basada en la evidencia (OBE)
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
b) Comprender el significado de la odontología basada en la evidencia						
c) Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
d) Implementar estrategias para escenarios específicos de atención al paciente						
e) Implementar una estrategia sistemática para encontrar evidencia.						

14) Establecimiento y mantenimiento de la salud bucal.
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Proporcionar estrategias de prevención, intervención y educación						
b) Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						

c) Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
d) Capacidad para evaluar el tratamiento y sus resultados						
e) Integra el consentimiento informado como práctica común						
f) Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
g) Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
h) Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						
i) Prevenir, reconocer y manejar emergencias médicas y dentales						

15) Profesionalismo
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Aplicar estándares éticos y legales en el suministro de cuidado dental						

b) Consultar o referir a colegas profesionales cuando esté indicado						
c) Demostrar habilidades comerciales, de gestión financiera y de recursos humanos						
d) Proporcionar garantía de calidad al tratar pacientes						
e) Mostrar comportamiento profesional						
f) Considerar el bienestar de un paciente						
g) Poseer habilidades para el examen del paciente						
i) Controlar el dolor y la ansiedad del paciente						

16) Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Pensar de una manera crítica						
b) Buscar soluciones a problemas						
c)Aprender sobre tópicos por su cuenta						
d)Promover la atención medica del paciente						
e)Comunicarse con los pacientes						
f)Demostrar que es un profesional						
g) Administrar los negocios, las finanzas y los recursos humanos de su oficina						

h) Cuidar del paciente						
i)Establecer la salud oral del paciente						
j) Mantener la salud oral del paciente						
k) Implementar principios de odontología basada en la evidencia.						
l) Planificar y tomar decisiones						

Sección 3

Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

17) Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia.
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Prevenir, diagnosticar y tratar enfermedades periodontales						
b) Manejar la atención de salud oral de niños, adolescentes						
c) Manejar la atención de salud oral de los adultos						
d) Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
e) Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

18) Cirugía Oral, Prostodoncia, Salud Publica Dental.
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente:

	1= No del todo	**2=solo**	**3= un poco**	**4=Moderadamente**	**5=muy**	**6=100%**

	seguro	un poco confiado	confiado	seguro	seguro	confiado
a) Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico oral						
b) Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
c) Evaluar los resultados de la atención dental integral						
d)Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
e) Prevenir, diagnosticar y tratar trastornos temporomandibulares						
f) Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
g) Comunicarse y colaborar con grupos e individuos con problemas de salud oral						
h) Promover buenos hábitos de salud oral en individuos y comunidades.						

19) Cariologia, Ortodoncia
Califique su nivel de confianza sobre:
El Odontólogo puede efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Prevenir y controlar la caries dental						

b) Desarrollar estrategias de evaluación y manejo de la caries dental						
c) Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
d) Implementar Ortodoncia Preventiva e Interceptiva						
e) Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

20)
Califique su nivel de confianza sobre:
El Odontólogo puede realizar efectivamente:

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) Odontología Restauradora						
b) Endodoncia						
c) Cirugía Oral						
d) Odontología Preventiva						
e) Ortodoncia						
f) Periodoncia						
g) Prostodoncia						

21) Califique su nivel de confianza sobre:
El Odontólogo puede realizar efectivamente:

	1= No del todo seguro	2=solo un poco confiado	3= un poco confiado	4=Moderadamente seguro	5=muy seguro	6=100% confiado
a) Pensamiento Crítico						
b) Capacidad para resolver problemas y buscar soluciones						
c) Puede aprender por sí solo						
d) Sabe promover la salud oral a sus pacientes						
e) Se sabe comunicar con sus pacientes						
f) Demuestra profesionalismo						
g) Tiene conceptos de Gestión de la consulta						
h) Sabe cuidar a su paciente y se preocupa por estos						
i) Mantiene la salud oral del paciente						
j) Basa sus decisiones en la evidencia científica						
k) Sabe planificar y tomar decisiones						

Sección 4
Preparación Universitaria del Odontólogo
Por favor seleccione de cual Universidad usted piensa los odontólogos están mejor preparados. Puede seleccionar varios.
22) Por favor califique su nivel de confianza sobre la preparación por Universidad.

	1= No del todo seguro	**2=solo un poco confiado**	**3= un poco confiado**	**4=Moderadamente seguro**	**5=muy seguro**	**6=100% confiado**
a) UNIBE						
UNPHU						
b) PUCMM (Santo Domingo)						
c)PUCMM (Santiago)						
d)UOD						
e) UFHEC						
f) UNIREMHOS						
g) UASD						
h) UCE						
i)UCATECI						
j) UCNE						
k) UTESA.						

Gracias

Appendix L

Google Forms Students Survey Spanish Version

La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados,docentes y profesionales de la odontología en la República Dominicana

*Obligatorio

1. Edad *

_____

2. Sexo *
Marca solo un óvalo.

- ◯ Masculino
- ◯ Femenino

3. Actualmente estudio en la siguiente universidad *
Marca solo un óvalo.

- ◯ PUCMM (Santiago)
- ◯ UCATECI
- ◯ UNIREMHOS
- ◯ UASD
- ◯ UCNE
- ◯ UOD
- ◯ UNPHU
- ◯ UCE
- ◯ UNIBE
- ◯ UFHEC
- ◯ PUCMM (Santo Domingo)

Dirección: La siguiente sección corresponde a la adquisición de competencias durante tu educación dental

4. Pensamiento crítico y resolución de problemas. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Integrar las tendencias emergentes en el cuidado de la salud oral						
Poseer un pensamiento critico						
Solucionar problemas en diferentes circunstancias						
Distinguir las dificultades en un problema						
Detectar las fortalezas y debilidades de las situaciones que se presenten						
Implementar las opciones más apropiadas en la resolución de un problema						

5. Aprendizaje auto-dirigido y promoción de la salud. Califique su nivel de confianza sobre:Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Mantenerse estudiando continuamente (o renovando conocimientos)						
Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
Identificar los factores de riesgo que pueden afectar a las personas y la población.						
Respeta las creencias y preferencias de todos los pacientes.						

6. Comunicación y habilidades interpersonales. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
Hable con personas de diversas poblaciones						
Toma decisiones aun cuando las condiciones son inciertas.						

7. Administración de consultorio and Informática. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Evaluar y aplicar información contemporánea y emergente						
Evaluar y gestionar modelos contemporáneos de gestión de la atención de la						
Comprenden los principios del manejo riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
Entender los conceptos para asegurar la calidad del tratamiento y manejo el buen manejo de los pacientes.						

8. Atención al paciente. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Abordar las necesidades del paciente como un ser humano completo.						
Facilitar consultas y referimientos con los especialistas relevantes						
Manejar emergencias médicas usando juicio profesional						
Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

9. Odontología basada en la evidencia (OBE) Califique su nivel de confianza sobre: Yo puedo efectivamente... *

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
Comprender el significado de la odontología basada en la evidencia						
Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
Implementar estrategias para escenarios específicos de atención al paciente						
Implementar una estrategia sistemática para encontrar evidencia.						

10. Establecimiento y mantenimiento de la salud bucal. Califique su nivel de confianza sobre:

Yo puedo efectivamente... *

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Proporcionar estrategias de prevención, intervención						
Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos						
Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
Capacidad para evaluar el tratamiento y sus resultados						
Integra el consentimiento informado como práctica						
Utilizar las guías universales de control de infecciones para todos los procedimientos						
Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral						
Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir, reconocer y manejar emergencias médicas y dentales						

11. Profesionalismo. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Aplicar estándares éticos y legales en el suministro						
Consultar o referir a colegas profesionales cuando						
Demostrar habilidades comerciales, de gestión financiera y de recursos						
Proporcionar garantía de calidad al tratar						
Mostrar comportamiento profesional						
Considerar el bienestar de un paciente						
Poseer habilidades para el examen del paciente						
Controlar el dolor y la ansiedad del paciente						

12. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Pensar de una manera crítica						
Buscar soluciones a problemas						
Aprender sobre tópicos por su cuenta						
Promover la atención medica del paciente						
Comunicarse con los pacientes						
Demostrar que es un profesional						
Administrar los negocios, las finanzas y los recursos humanos de su oficina						
Cuidar del paciente						
Establecer la salud oral del paciente						
Mantener la salud oral del paciente						
Implementar principios de odontología basada en la evidencia.						
Planificar y tomar decisiones						

Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

13. Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia. Califique su nivel de confianza sobre:Yo puedo efectivamente... *

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir, diagnosticar y tratar enfermedades periodontales						
Manejar la atención de salud oral de niños, adolescentes						
Manejar la atención de salud oral de los adultos						
Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

14. Cirugía Oral, Prostodoncia, Salud Publica Dental. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico oral						
Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
Evaluar los resultados de la atención dental integral						
d)Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
Prevenir, diagnosticar y tratar trastornos temporomandibulares						
Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
Comunicarse y colaborar con grupos e individuos con problemas de salud oral						
Promover buenos hábitos de salud oral en individuos y comunidades.						

15. Cariologia, Ortodoncia. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir y controlar la caries dental						
Desarrollar estrategias de evaluación y manejo de la caries dental						
Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
Implementar Ortodoncia Preventiva e Interceptiva						
Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

16. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Odontología Restauradora						
Endodoncia						
Cirugía Oral						
Odontología Preventiva						
Ortodoncia						
Periodoncia						
Prostodoncia						

Componente del currículo dental (estrategias de enseñanza,
horas preclínicas / clínicas, servicio comunitario,odontología basada en la evidencia)

17. Indique si esta de acuerdo en lo siguiente. El plan de estudios dental en que estudie implementa cursos preclínicos para estas áreas dentales: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

18. Indique si esta de acuerdo en lo siguiente. Las horas que implementa mi plan de estudios odontológicos en los preclínicos para estas áreas dentales fueron suficientes para enseñarme cómo tratar a los pacientes: *

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

19. Indique si esta de acuerdo en lo siguiente. Las sesiones preclínicas en estas áreas me prepararono de manera efectiva como un futuro dentista: *

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

20. Indique si esta de acuerdo en lo siguiente. El plan de estudios odontológicos donde estudie dedica tiempo para preparar a los estudiantes deodontología de manera efectiva en estas áreas: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Llevar a cabo investigaciones dentales						
Revisiones sistemáticas de la literatura en cualquiera de las clases para mantenernos actualizado						
Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos.						

21. Indique si esta de acuerdo en lo siguiente. Mis profesores me enseñaron a cómo: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Solucionar problemas						
Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos						
Pensar de manera critica						
Buscar soluciones a caso						

22. Indique si esta de acuerdo en lo siguiente. El servicio comunitario de mi plan de estudios dental me preparo efectivamente para: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Estar comprometido con la comunidad y esforzarse para que sea un lugar mejor						
Apreciar la influencia de las fuerzas sociales, culturales y económicas en el cuidado de la salud oral						
Promoción de la salud						
Comprender y cooperar con la Salud Pública Local y Global						
Experiencias en salud comunitaria como parte del plan de estudios dental						
Experiencias extracurriculares en salud comunitaria durante la vida como estudiante						

23. Indique si está de acuerdo en lo siguiente. Las estrategias que utilizaron para para enseñarme incluyen: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Resolución de casos						
Asistir a conferencias						
Realizar videos						
Realizar diarios reflexivos						
Lluvia de ideas						
Tutoriales con temas mostrados en clase						
Uso de la tecnología tales como chat de whatsapp, facebook, google docs, etc.						
Clases virtuales						
Aprendizaje cooperativo						
Preclínicos						
Ayudantías clínicas, de los diversos trabajos que se realizan en la clínica dental.						
Participación en congresos y cursos extracurriculares fuera o dentro de la universidad						
Elaboración de posters						

24. FormaciónIndique si esta de acuerdo en lo siguiente. Las prácticas clínicas en estas áreas me prepararon eficazmente para tratar a los pacientes *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Diagnostico						
Odontología restauradora						
Odontopediatria						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Cariologia						

25. FormaciónIndique si está de acuerdo en lo siguiente. Yo percibo que puedo efectivamente: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Ejercer la odontología al graduarse						

26. Las fortalezas en el plan de estudios en que estudie son: *

27. Las debilidades en el plan de estudios en que estudie son: *

¡Gracias por su participación!

Con la tecnología
Google Forms

Appendix L-1

Google Forms Teachers Survey Spanish Version

Encuesta"La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados, docentes y profesionales de la odontología en la República Dominicana"

1. Edad:

2. Sexo:
   Marca solo un óvalo.
   - Masculino
   - Femenino

3. Años de docencia:

4. Años de graduado:

5. Soy:
   Selecciona todos los que correspondan.
   - [ ] Odontologo General
   - [ ] Doctor en Medicina
   - [ ] Posgrado
   - [ ] Maestria
   - [ ] PHD

6. Actualmente soy docente de: En caso de que esté en varias universidades, seleccione solo en la que tenga más horas de docencia.

- [ ] UNIBE
- [ ] UNFHU
- [ ] PUCMM (Santo Domingo)
- [ ] PUCMM (Santiago)
- [ ] UOD UFHEC
- [ ] UNIREMHOS
- [ ] UASD
- [ ] UCE
- [ ] UCATECI
- [ ] UCNE
- [ ] UTESA
- [ ]

7. Dirección: Seleccione todas las opciones que correspondan. Actualmente trabajo en: Selecciona todos los que correspondan.

- [ ] Práctica Odontológica
- [ ] Docencia

8. Especialidad en: Seleccione todas las que correspondan. Selecciona todos los que correspondan.

- [ ] Odontología Restauradora
- [ ] Prostodoncia
- [ ] Endodoncia
- [ ] Periodoncia
- [ ] Salud Publica
- [ ] Cirugía Oral
- [ ] Cirugía maxilo facial y Oral
- [ ] Odontopediatria
- [ ] Odontología Forense
- [ ] Patología oral
- [ ] Ortodoncia
- [ ] Implantologia
- [ ] Maestría en Educación Superior
- [ ] PHD
- [ ] Ninguno

Dirección: Sección 2

Pensamiento crítico y resolución de problemas.

9. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Integrar las tendencias emergentes en el cuidado de la salud oral						
Poseer un pensamiento critico						
Solucionar problemas en diferentes circunstancias						
Distinguir las dificultades en un problema						
Detectar las fortalezas y debilidades de las situaciones que se presenten						
Implementar las opciones más apropiadas en la resolución de un problema.						

Aprendizaje auto-dirigido y promoción de la salud

10. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Mantenerse estudiando continuamente (o renovando conocimientos)						
Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
Identificar los factores de riesgo que pueden afectar a las personas y la población						
Respeta las creencias y preferencias de todos los pacientes.						

Comunicación y habilidades interpersonales

11. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
Habla con personas de diversas poblaciones						
Toma decisiones aun cuando las condiciones son inciertas.						

Administración de consultorio e Informática

12. Califiquesu nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Evaluar y aplicar información contemporánea y emergente						
Evaluar y gestionar modelos contemporáneos de gestión de la atención de la salud buca						
Comprenden los principios del manejo riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
Entender los conceptos para asegurar la calidad del tratamiento y manejo el bue manejo de los pacientes.						

Atención al paciente

13. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Abordar las necesidades del paciente como un ser humano completo.						
Facilitar consultas y referimientos con los especialistas relevantes						
Manejar emergencias médicas usando juicio profesional						
Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

Odontología basada en la evidencia (OBE)

14. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
Comprender el significado de la odontología basada en la evidencia						
Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
Implementar estrategias para escenarios específicos de atención al paciente						
Implementar una estrategia sistemática para encontrar evidencia.						

Establecimiento y mantenimiento de la salud bucal.

15. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Proporcionar estrategias de prevención, intervención y educación						
Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
Capacidad para evaluar el tratamiento y sus resultados						
Integra el consentimiento informado como práctica común						
Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológic						
Prevenir, reconocer y manejar emergencias médicas y dentales						

Profesionalismo.

16. Califiquesu nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Aplicar estándares éticos y legales en el suministro de cuidado dental						
Consultar o referir a colegas profesionales cuando esté indicado						
Demostrar habilidades comerciales, de gestión financiera y de recursos humanos						
Proporcionar garantía de calidad al tratar pacientes						
Mostrar comportamiento profesional						
Considerar el bienestar de un paciente						

17. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Pensar de una manera crítica						
Buscar soluciones a problemas						
Aprender sobre tópicos por su cuenta						
Promover la atención medica del paciente						
Comunicarse con los pacientes						
Demostrar que es un profesional						
Administrar los negocios, las finanzas y los recursos humanos de su oficina						
Cuidar del paciente						
Establecer la salud oral del paciente						
Mantener la salud oral del paciente						
Implementar principios de odontología basada en la evidencia.						
Planificar y tomar decisiones						

Sección 3 : Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia.

18. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Prevenir, diagnosticar y tratar enfermedades periodontales						
Manejar la atención de salud oral de niños, adolescentes						
Manejar la atención de salud oral de los adultos						
Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

Cirugía Oral, Prostodoncia, Salud Publica Dental.

19. Califiquesu nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico ora						
Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
Evaluar los resultados de la atención dental integral						
Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
Prevenir, diagnosticar y tratar trastornos temporomandibulares						
Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
Comunicarse y colaborar con grupos e individuos con problemas de salud oral						
Promover buenos hábitos de salud oral en individuos y comunidades.						

Cariologia, Ortodoncia

20. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Prevenir y controlar la caries dental						
Desarrollar estrategias de evaluación y manejo de la caries dental						
Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
Implementar Ortodoncia Preventiva e Interceptiva						
Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

21. Califique su nivel de confianza sobre: Mis estudiantes pueden efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Muy seguro	100% confiado
Odontología Restauradora						
Endodoncia						
Cirugía Oral						
Odontología Preventiva						
Ortodoncia						
Periodoncia						
Prostodoncia						

Sección 4: Componente del currículo dental (estrategias de enseñanza, horas preclínicas / clínicas, servicio comunitario, odontología basada en la evidencia)

22. Indique si esta de acuerdo en lo siguiente. El plan de estudios dental donde enseño implementa cursos preclínicos para estas áreas dentales

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

23. Indique si esta de acuerdo en lo siguiente: Las horas que implementa mi plan de estudios odontológicos en los preclínicos para estas áreas dentales fueron suficientes para enseñar a mis alumnos cómo tratar a los pacientes

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

24. Indique si esta de acuerdo en lo siguiente. Las sesiones preclínicas en estas áreas prepararon a mis estudiantes de manera efectiva como un futuro dentista

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

25. Indique si esta de acuerdo en lo siguiente. El plan de estudios odontológicos donde enseño dedica tiempo para preparar a los estudiantes de odontología de manera efectiva en estas áreas

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Llevar a cabo investigaciones dentales						
Revisiones sistemáticas de la literatura en cualquiera de las clases para mantenernos actualizado.						
Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos.						

26. Indique si esta de acuerdo en lo siguiente. Como profesores, he enseñado a mis alumnos a cómo

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Solucionar problemas						
Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos						
Pensar de manera critica						
Buscar soluciones a caso						

27. Indique si esta de acuerdo en lo siguiente. El servicio comunitario de mi plan de estudios dental se preparó efectivamente para

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Estar comprometido con la comunidad y esforzarse para que sea un lugar mejor	◯	◯	◯	◯	◯	◯
Apreciar la influencia de las fuerzas sociales, culturales y económicas en el cuidado de la salud oral	◯	◯	◯	◯	◯	◯
Promoción de la salud	◯	◯	◯	◯	◯	◯
Comprender y cooperar con la Salud Pública Local y Global	◯	◯	◯	◯	◯	◯
Experiencias en salud comunitaria como parte del plan de estudios dental	◯	◯	◯	◯	◯	◯
Experiencias extracurriculares en salud	◯	◯	◯	◯	◯	◯
comunitaria durante la vida como estudiante	◯	◯	◯	◯	◯	◯

28. Indique si está de acuerdo en lo siguiente.Estrategias de enseñanzas En general, considero que las estrategias de enseñanza que enseño son motivadoras y enriquecedoras para mis estudiantes

Marca solo un óvalo.

- ◯ Muy en desacuerdo
- ◯ En desacuerdo
- ◯ Ligeramente en desacuerdo
- ◯ Ligeramente de acuerdo
- ◯ De acuerdo
- ◯ Muy de acuerdo

29. Indique si está de acuerdo en lo siguiente. Las estrategias que uso para enseñar incluyen:
Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Resolución de casos						
Asistir a conferencias						
Realizar videos						
Realizar diarios reflexivo						
Lluvia de ideas						
Tutoriales con temas mostrados en clase						
Uso de la tecnología tales como chat de whatsapp, facebook, google docs, etc.						
Clases virtuales						
Aprendizaje cooperativo						
Preclínicos						
Ayudantías clínicas, de los diversos trabajos que se realizan en la clínica dental.						
Participación en congresos y cursos extracurriculares fuera o dentro de la universidad						
Elaboración de posters						

Formación: Indique si esta de acuerdo en lo siguiente.

30. Las prácticas clínicas en estas áreas preparan eficazmente a los estudiantes para tratar a los pacientes

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Diagnostico						
Odontología restauradora						
Odontopediatria						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Cariologia						

31. Formación Indique si esta de acuerdo en lo siguiente.Yo percibo que mis estudiantes pueden efectivamente:

Marca solo un óvalo por fila.

	Muy en desacuerdo	En desacuerdo	Ligeramente en desacuerdo	Ligeramente de acuerdo	De acuerdo	Muy de acuerdo
Ejercer la odontología al graduarse.						

32. Las fortalezas en mi curriculum son:

33. Las debilidades en mi curriculum son:

Appendix L-2

Google Forms Practicing Dentists Survey Spanish Version

Encuesta a Empleador "La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados, docentes y profesionales de la odontología en la República Dominicana"

Sección 1

Por favor proporcione la siguiente información general sobre usted:

1. Edad

2. Sexo
   Marca solo un óvalo.

   - Masculino
   - Femenino

3. Yo soy: Por favor seleccione todas las que apliquen.
   Selecciona todos los que correspondan.

   - [ ] Odontólogo General
   - [ ] Dr. en Medicina
   - [ ] Tengo especialización
   - [ ] Poseo Nivel de Maestria
   - [ ] Tengo nivel de PhD

4. Yo soy el empledaory/o Superviso en: Por favor seleccione todas las que apliquen.
   Selecciona todos los que correspondan.

   - [ ] Ameridente
   - [ ] Salud Bucal
   - [ ] Odontodom
   - [ ] Odontotec
   - [ ] Orthoral
   - [ ] Hospital
   - [ ] Clínica Dental

5. Dirección: Por favor seleccione todas las que apliquen.
Selecciona todos los que correspondan.

- [ ] Soy Odontólogo
- [ ] Imparto Docencia

6. Mi especialidad es. Seleccione todas las que apliquen.
Selecciona todos los que correspondan.

- [ ] Operatoria o Dentistica.
- [ ] Rehabilitacion Oral.
- [ ] Endodoncia.
- [ ] Periodoncia.
- [ ] Salud Pública.
- [ ] Cirugía Oral.
- [ ] Cirugía Oral y Maxilo Facial.
- [ ] Odontología Pediátrica.
- [ ] Odontología Forense.
- [ ] Patología Oral.
- [ ] Orthodoncia.
- [ ] Implantología Oral.
- [ ] Master en Educación Superior.
- [ ] Master en Administracion de Empresas.
- [ ] Administracion de Empresas

7. Yo superviso o empleo odontólogos graduados de los siguientes lugares. Por favor, seleccione todas las que apliquen.
Selecciona todos los que correspondan.

- [ ] UNIBE
- [ ] UNPHU
- [ ] PUCMM (Santo Domingo)
- [ ] PUCMM (Santiago)
- [ ] UOD UFHEC
- [ ] UNIREMHOS
- [ ] UASD
- [ ] UCE
- [ ] UCATECI
- [ ] UCNE
- [ ] UTESA.
- [ ]

Dirección:

La siguiente sección corresponde a la adquisición de competencias que usted observa el odontólogo que usted emplea o supervisa. Capacidad de tener:

8. Pensamiento crítico y resolución de problemas. Califique su nivel de confianza sobre:El Odontólogo puede efectivamente:
   Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Integrar las tendencias emergentes en el cuidado de la salud oral						
Poseer un pensamiento critico						
Solucionar problemas en diferentes circunstancias						
Distinguir las dificultades en un problema						
Detectar las fortalezas y debilidades de las situaciones que se presenten						
Implementar las opciones más apropiadas en la resolución de un problema.						

Capacidad de tener:

Aprendizaje auto-dirigido y promoción de la salud

9. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Mantenerse estudiando continuamente (o renovando conocimientos)						
Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
Identificar los factores de riesgo que pueden afectar a las personas y la población.						
Respeta las creencias y preferencias de todos los pacientes.						

Capacidad de tener:

Comunicación y habilidades interpersonales

10. Califiquesu nivel de confianza sobre: El Odontólogo puede efectivamente
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
Habla con personas de diversas poblaciones						
Toma decisiones aun cuando las condiciones son inciertas.						

Capacidad de tener:

Administración de consultorio and Informática

11. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Evaluar y aplicar información contemporánea y emergente						
Evaluar y gestionar modelos contemporáneos de gestión de la atención de la salud bucal						
Comprenden los principios del manejo de riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
Entender los conceptos para asegurar la calidad del tratamiento y manejo el bue manejo de los pacientes.						

Capacidad de tener:

Atención al paciente

12. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Abordar las necesidades del paciente como un ser humano completo.						
Facilitar consultas y referimientos con los especialistas relevantes						
Manejar emergencias médicas usando juicio profesional						
Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario						
Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

Capacidad de tener:

Odontología basada en la evidencia (OBE)

13. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente::
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
Comprender el significado de la odontología basada en la evidencia						
Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
Implementar estrategias para escenarios específicos de atención al paciente						
Implementar una estrategia sistemática para encontrar evidencia.						

Capacidad de tener:

Establecimiento y mantenimiento de la salud bucal.

14. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Proporcionar estrategias de prevención, intervención y educación						
Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
Capacidad para evaluar el tratamiento y sus resultados						
Integra el consentimiento informado como práctica común						
Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						
Prevenir, reconocer y manejar emergencias médicas y dentales						

Capacidad de tener:

Profesionalismo

15. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Aplicar estándares éticos y legales en el suministro de cuidado dental						
Consultar o referir a colegas profesionales cuando esté indicado						
Demostrar habilidades comerciales, de gestión financiera y de recursos humanos						
Proporcionar garantía de calidad al tratar pacientes						
Mostrar comportamiento profesional						
Considerar el bienestar de un paciente						
Poseer habilidades para el examen del paciente						
Controlar el dolor y la ansiedad del paciente						

16. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Pensar de una manera crítica						
Buscar soluciones a problemas						
Aprender sobre tópicos por su cuenta						
Promover la atención medica del paciente						
Comunicarse con los pacientes						
Demostrar que es un profesiona						
Administrar los negocios, las finanzas y los recursos humanos de su oficina						
Cuidar del paciente						
Establecer la salud oral del paciente						
Mantener la salud oral del paciente						
Implementar principios de odontología basada en la evidencia.						
Planificar y tomar decisiones						

Sección 3: Demostración de habilidades observadas en las prácticas clínicas en varias áreas de la odontología

Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia.

17. Califiquesu nivel de confianza sobre: Solo un poco confiadoEl Odontólogo puede efectivamente:

Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Prevenir, diagnosticar y tratar enfermedades periodontales						
Manejar la atención de salud oral de niños, adolescentes						
Manejar la atención de salud oral de los adultos						
Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

Cariologia, Ortodoncia

18. Califique su nivel de confianza sobre: El Odontólogo puede efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Prevenir y controlar la caries dental						
Desarrollar estrategias de evaluación y manejo de la caries dental						
Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
Implementar Ortodoncia Preventiva e Interceptiva						
Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

19. Califique su nivel de confianza sobre:El Odontólogo puede realizar efectivamente:
Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Odontología Restauradora						
Endodoncia						
Cirugía Oral						
Odontología Preventiva						
Ortodoncia						
Periodoncia						
Prostodoncia						

20. Califique su nivel de confianza sobre lo que usted observa el odontólogo tiene: El Odontólogo puede realizar efectivamente:

Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
Pensamiento Critico						
Capacidad para resolver problemas y buscar soluciones						
Puede aprender por si solo						
Sabe promover la salud oral a sus pacientes						
Se sabe comunicar con sus pacientes						
Demuestra profesionalismo						
Tiene conceptos de Gestion de la consulta						
Sabe cuidar a su paciente y se precocupa por estos						
Mantiene la salud oral del paciente						
Basa sus decisiones en la evidencia científica						
Sabe planificar y tomar decisiones						

Section 4: Preparación Universitaria del Odontólogo

Por favor seleccione de cual Universidad usted piensa los odontólogos están mejor preparados. Puede seleccionar varios.

21. Por favor califique su nivel de confianza sobre la preparación que usted tiene el odontólogo que supervisa por la Universidad de la que ha egresado.

Marca solo un óvalo por fila.

	No del todo seguro	Solo un poco confiado	Un poco confiado	Moderadamente seguro	Seguro	100% Seguro
UNIBE						
UNPHU						
PUCMM (Santo Domingo)						
PUCMM (Santiago)						
UOD						
UFHEC						
UNIREMHOS						
UASD						
UCE						
UCATECI						
UCNE						
UTESA						

Con la tecnología
Google Forms

Appendix L-3

Google Forms Industry Professionals Survey Spanish Version

La adquisición de competencias dentales y habilidades clínicas: percepciones de estudiantes, egresados,docentes y profesionales de la odontología en la República Dominicana

*Obligatorio

1. Edad *

2. Sexo *
Marca solo un óvalo.

- Masculino
- Femenino

3. Me gradue en la siguiente universidad *
Marca solo un óvalo.

- PUCMM (Santiago)
- UCATECI
- UNIREMHOS
- UASD
- UCNE
- UOD
- UNPHU
- UCE
- UNIBE
- UFHEC
- PUCMM (Santo Domingo)

4. Tengo de graduado *
Marca solo un óvalo.

- 0
- 1
- 2
- 3
- 4
- 5
- Otro: _____ Pasa a "¡Gracias por su participación!."

Generales

5. Dirección: Por favor seleccione todas las que aplique *
Selecciona todos los que correspondan.

- [ ] Estoy ejerciendo actualmente
- [ ] Tengo mi propio consultorio
- [ ] Trabajo para salud pública o el sector público
- [ ] Trabajo en una clínica privada
- [ ] Soy docente e una escuela de Odontología

6. He tomado algún curso de educación continua desde que me gradué *
Marca solo un óvalo.

- Si
- No

7. En caso haya tomado algun curso especifique

_____

Dirección: La siguiente sección corresponde a la adquisición de competencias durante tu educación dental

8. Pensamiento crítico y resolución de problemas. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Poseer un pensamiento critico						
Solucionar problemas en diferentes circunstancias						
Distinguir las dificultades en un problema						
Detectar las fortalezas y debilidades de las situaciones que se presenten						
Implementar las opciones más apropiadas en la resolución de un problema						

9. Aprendizaje auto-dirigido y promoción de la salud. Califique su nivel de confianza sobre:Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Mantenerse estudiando continuamente (o renovando conocimientos)						
Implementar estrategias para la promoción de la salud y la prevención de enfermedades orales mediante la educación de personas y comunidades.						
Aplicar las precauciones estándar y utilizar diversos métodos que garanticen el bienestar y la seguridad del paciente y del profesional de la salud bucal en la prestación de la atención.						
Identificar los factores de riesgo que pueden afectar a las personas y la población.						
Respeta las creencias y preferencias de todos los pacientes.						

10. Comunicación y habilidades interpersonales. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Utiliza las habilidades interpersonales y de comunicación apropiadas cuando se comunica con los pacientes, los miembros de su equipo y otros profesionales de la salud.						
Aplica principios psicosociales y sociales en el cuidado de la salud centrado en el paciente						
Hable con personas de diversas poblaciones						
Toma decisiones aun cuando las condiciones son inciertas.						

11. Administración de consultorio and Informática. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Evaluar y aplicar información contemporánea y emergente						
Evaluar y gestionar modelos contemporáneos de gestión de la atención de la salud bucal						
Comprenden los principios del manejo riesgos, incluido el consentimiento informado y el mantenimiento adecuado de registros en la atención del paciente.						
Demostrar habilidades efectivas de negocios, administración financiera y recursos humanos						
Entender los conceptos para asegurar la calidad del tratamiento y manejo el buen manejo de los pacientes.						

12. Atención al paciente. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Abordar las necesidades del paciente como un ser humano completo.						
Facilitar consultas y referimientos con los especialistas relevantes						
Manejar emergencias médicas usando juicio profesional						
Proporcionar soporte vital básico y utilizar el conocimiento de RCP cuando sea necesario.						
Diferenciar la relación entre la enfermedad sistémica, los medicamentos y la salud oral que impactan la atención general del paciente y los efectos del tratamiento.						

13. Odontología basada en la evidencia (OBE) Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Reconocer los factores de riesgo que requieren intervención para prevenir enfermedades						
Comprender el significado de la odontología basada en la evidencia						
Evaluar e integrar los mejores resultados de investigación con experiencia clínica						
Implementar estrategias para escenarios específicos de atención al paciente						
Implementar una estrategia sistemática para encontrar evidencia.						

14. Establecimiento y mantenimiento de la salud bucal. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Proporcionar estrategias de prevención, intervención y educación						
Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
Capacidad para evaluar el tratamiento y sus resultados						
Integra el consentimiento informado como práctica común						
Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir, reconocer y manejar emergencias médicas y dentales						

15. Establecimiento y mantenimiento de la salud bucal. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Proporcionar estrategias de prevención, intervención y educación						
Participar con los miembros de su equipo y otros profesionales de la salud en el manejo y promoción de la salud para todos los pacientes						
Reconocer y apreciar la necesidad de contribuir a la mejora de la salud oral de los pacientes						
Capacidad para evaluar el tratamiento y sus resultados						
Integra el consentimiento informado como práctica común						
Utilizar las guías universales de control de infecciones para todos los procedimientos clínicos						
Obtener e interpretar los datos médicos del paciente, incluido un examen intra / extra oral completo						
Identificar la manifestación de la enfermedad sistémica y cómo la enfermedad y su control pueden afectar el tratamiento odontológico						

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir, reconocer y manejar emergencias médicas y dentales						

16. Profesionalismo. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Aplicar estándares éticos y legales en el suministro de cuidado dental						
Consultar o referir a colegas profesionales cuando esté indicado						
Demostrar habilidades comerciales, de gestión financiera y de recursos humanos						
Proporcionar garantía de calidad al tratar pacientes						
Mostrar comportamient o profesional						
Considerar el bienestar de un paciente						
Poseer habilidades para el examen del paciente						
Controlar el dolor y la ansiedad del paciente						

17. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Pensar de una manera crítica						
Buscar soluciones a problemas						
Aprender sobre tópicos por su cuenta						
Promover la atención medica del paciente						
Comunicarse con los pacientes						
Demostrar que es un profesional						
Administrar los negocios, las finanzas y los recursos humanos de su oficina						
Cuidar del paciente						
Establecer la salud oral del paciente						
Mantener la salud oral del paciente						
Implementar principios de odontología basada en la evidencia.						
Planificar y tomar decisiones						

Demostración de habilidades en las prácticas clínicas en varias áreas de la odontología

18. Periodoncia, Odontopediatria, Odontología restauradora, Endodoncia. Califique su nivel de confianza sobre:Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir, diagnosticar y tratar enfermedades periodontales						
Manejar la atención de salud oral de niños, adolescentes						
Manejar la atención de salud oral de los adultos						
Realizar procedimientos restauradores que conservan la estructura dental, mantienen la función y estética						
Diagnosticar, identificar y controlar las enfermedades pulpares y perirradiculares						

19. Cirugía Oral, Prostodoncia, Salud Publica Dental. Califique su nivel de confianza sobre: Yo puedo efectivamente... *

Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Diagnosticar y manejar las necesidades de realizar un tratamiento quirúrgico oral						
Reemplazar la estructura del diente ausente o alterado, manteniendo la función y la estética						
Evaluar los resultados de la atención dental integral						
d)Diagnosticar y manejar el desarrollo de anomalías o alteraciones oclusales						
Prevenir, diagnosticar y tratar trastornos temporomandibulares						
Manejar el reemplazo de dientes para el paciente parcial o completamente edentulo						
Comunicarse y colaborar con grupos e individuos con problemas de salud oral						
Promover buenos hábitos de salud oral en individuos y comunidades.						

20. Cariologia, Ortodoncia. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Prevenir y controlar la caries dental						
Desarrollar estrategias de evaluación y manejo de la caries dental						
Comprender la anatomía y el crecimiento craneo-facial y su relación con el desarrollo infantil						
Implementar Ortodoncia Preventiva e Interceptiva						
Diagnosticar y manejar las indicaciones y contraindicaciones en relación con el tratamiento básico relacionado con la Ortodoncia Preventiva e Interceptiva						

21. Califique su nivel de confianza sobre: Yo puedo efectivamente... *
Marca solo un óvalo por fila.

	1 No del todo seguro	2 Solo un poco confiado	3 Un poco confiado	4 Moderadamente seguro	5 Muy seguro	6 100% confiado
Odontología Restauradora						
Endodoncia						
Cirugía Oral						
Odontología Preventiva						
Ortodoncia						
Periodoncia						
Prostodoncia						

Componente del currículo dental (estrategias de enseñanza,
horas preclínicas / clínicas, servicio comunitario,odontología basada en la evidencia)

22. Indique si esta de acuerdo en lo siguiente. El plan de estudios dental en que estudie implementa cursos preclínicos para estas áreas dentales: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

23. Indique si esta de acuerdo en lo siguiente. Las horas que implementa mi plan de estudios odontológicos en los preclínicos para estas áreas dentales fueron suficientes para enseñarme cómo tratar a los pacientes: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

24. Indique si esta de acuerdo en lo siguiente. Las sesiones preclínicas en estas áreas me prepararono de manera efectiva como un futuro dentista: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Anatomía Dental						
Odontología Restauradora						
Anestesia Dental						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Biomateriales						

25. Indique si esta de acuerdo en lo siguiente. El plan de estudios odontológicos donde estudie dedica tiempo para preparar a los estudiantes deodontología de manera efectiva en estas áreas: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Llevar a cabo investigaciones dentales						
Revisiones sistemáticas de la literatura en cualquiera de las clases para mantenernos actualizado						
Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos.						

26. Indique si esta de acuerdo en lo siguiente. Mis profesores me enseñaron a cómo: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Solucionar problemas						
Implementar los mejores tratamientos para el paciente considerando los beneficios y daños de los tratamientos alternativos						
Pensar de manera critica						
Buscar soluciones a caso						

27. Indique si esta de acuerdo en lo siguiente. El servicio comunitario de mi plan de estudios dental me preparo efectivamente para: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Estar comprometido con la comunidad y esforzarse para que sea un lugar mejor						
Apreciar la influencia de las fuerzas sociales, culturales y económicas en el cuidado de la salud oral						
Promoción de la salud						
Comprender y cooperar con la Salud Pública Local y Global						
Experiencias en salud comunitaria como parte del plan de estudios dental						
Experiencias extracurriculares en salud comunitaria durante la vida como estudiante						

28. Indique si está de acuerdo en lo siguiente. Las estrategias que utilizaron para para enseñarme incluyen: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Resolución de casos						
Asistir a conferencias						
Realizar videos						
Realizar diarios reflexivos						
Lluvia de ideas						
Tutoriales con temas mostrados en clase						
Uso de la tecnología tales como chat de whatsapp, facebook, google docs, etc.						
Clases virtuales						
Aprendizaje cooperativo						
Preclínicos						
Ayudantías clínicas, de los diversos trabajos que se realizan en la clínica dental.						
Participación en congresos y cursos extracurriculares fuera o dentro de la universidad						
Elaboración de posters						

29. FormaciónIndique si esta de acuerdo en lo siguiente. Las prácticas clínicas en estas áreas me prepararon eficazmente para tratar a los pacientes *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Diagnostico						
Odontología restauradora						
Odontopediatria						
Endodoncia						
Prostodoncia						
Periodoncia						
Cirugía Oral						
Cariologia						

30. FormaciónIndique si está de acuerdo en lo siguiente. Yo percibo que puedo efectivamente: *

Marca solo un óvalo por fila.

	1 Muy en desacuerdo	2 En desacuerdo	3 Ligeramente en desacuerdo	4 Ligeramente de acuerdo	5 De acuerdo	6 Muy de acuerdo
Ejercer la odontología al graduarse						

31. Las fortalezas en el plan de estudios en que estudie son: *

32. Las debilidades en el plan de estudios en que estudie son: *

¡Gracias por su participación!

Appendix M

Participant's Demographics

Appendix M
Participant's Demographics

Table 97

Number of Students by University

University	*N*	Percentage (%)	Higher Institution Type
UASD	22	14.4%	Public
UCATECI	33	21.6%	Private (Catholic)
UCE	27	17.6%	Private
UCNE	20	13.1%	Private (Catholic)
UFHEC	6	3.9%	Private
UNIBE	10	6.5%	Private
UNIREMHOS	20	13.1%	Private
UOD	13	8.5%	Private
UNPHU	2	1.3%	Private
Total	153	100	

Note: Students by University

Table 98

Number of Practicing Dentists by University and Type of University

University	***N***	**Percentage (%)**	**Higher Institution Type**
UASD	15	9.8%	Public
UCATECI	2	1.3%	Private (Catholic)
UCE	9	5.9 %	Private
UCNE	4	2.6 %	Private (Catholic)
UFHEC	1	0.7 %	Private
UNIBE	61	39.9 %	Private
UNIREMHOS	1	0.7 %	Private
UOD	1	0.7 %	Private
UNPHU	5	3.3%	Private
Total	153	100	

Note: Practicing Dentists by University and Type of University

Table 99

Faculty Demographics Regarding Sex and Age

Gender	*N*	Percentage (%)	Age	*N*	Percentage (%)
Male	18	18.3%	22	4	0.7%
Female	74	(48.4)%	27	3	2.0%
			28	1	0.7%
			29	11	7.2%
			30	8	5.2%
			31	7	4.6%
			32	6	3.9%
			33	10	6.5%
			34	5	3.3%
			35	2	1.3%
			36	8	5.2%
			37	3	2.0%
			38	4	2.6%
			39	6	3.9%
			40	3	2.0%
			41	8	5.2%
			42	3	2.0%
			43	3	2.0%
			44	2	1.3%
			45	3	2.0%
			46	3	2.0%
			47	2	1.3%
			48	1	0.7%
			50	4	2.6%
			51	1	0.7%
			52	2	1.3%
			53	3	2.0%
			54	4	2.6%
			55	4	2.6%
			57	1	0.7%
			58	1	0.7%
			59	2	1.3%

Table 99 – Continued

Gender	*N*	Percentage (%)	Age	*N*	Percentage (%)
			60	2	1.3%
			61	1	0.7%
			62	3	2.0%
			63	4	2.6%
			65	2	1.3%
			68	2	1.3%
				102	100%
Total	153	100			

Note: Faculty Demographics. Gender and Age

Table 100

Faculty's Degrees

Faculty Preparation	*N*	Percentage
Oral and Maxilo Facial Surgery (OMS)	5	3.3%
OMS, Implantologist, Master I Higher Educatiom, and PHD	2	1.3%
OMS and Master in Higher Education	1	0.7%
OMS and PHD	2	1.3%
Oral Surgeons and Implantologists	3	2.0%
Oral Surgeons	4	2.6%
Endodontists	8	5.2%
Endodontist and Implantologist	1	.07%
Endodontist ,Implantologist and Master in HIE	1	0.7%
Endodontist and Pediatric Dentist	1	0.7%
Endodontist and Periodontist	1	0.7%
Implantologist Master in HIE	1	0.7%
DDS and Master in HIE	5	3.3%
Not answered	8	5.2%
Post Graduate in Operative Dentistry	8	5.2%
Master in Restorative Dentistry and Master in HIE	3	2.0%
Post graduate in Restorative Dentistry, Periodontist, and Master in Higher Education	1	0.7%
Post graduate in Restorative Dentistry and Prostodontics, Forensic Dentistry and Master in Higher Education,	1	0.7%
Post graduate in Restorative Dentistry and Public Health	1	0.7%
Post graduate in Restorative Dentistry, Public Health, and Oral Surgery,	2	1.3%

Table 100 – Continued

Faculty Preparation	*N*	Percentage
Post graduate in Restorative Dentistry, Public Health and Oral Pathology,	1	0.7%
Pediatric Dentist,	7	4.6%
Pediatric Dentists and PHD	1	0.7%
Orthodontists with Master in HIE	2	1.3%
Oral Pathologist. Orthodontist and Master in HIE	1	0.7%
Periodontists	4	2.6%
Periodontists and Implantologist	3	2.0%
Postgraduate in Public Health,	2	1.3%
Postgraduate in Public Health and Oral Surgery	1	0.7%
Postgraduate in Public Health and Pediatric Dentistry.	1.	0.7%

Note: Dental Faculty Postgraduate Studies

Table 101

Number of Faculty Teaching by University and by University Type

University	*N*	Percentage (%)	Higher Institution Type
UASD	22	14.4%	Public
UCATECI	33	21.6%	Private (Catholic)
UCE	27	17.6%	Private
UCNE	20	13.1%	Private (Catholic)
UFHEC	6	3.9%	Private
UNIBE	10	6.5%	Private
UNIREMHOS	20	13.1%	Private
UOD	13	8.5%	Private
UNPHU	2	1.3%	Private
Total	153	100	

Note: Universities Where Faculty Teach

Table 102

Industry Professional's Ages

Industry Profesionals	Ages	*N*	Percentage (%)
	27 years	2	1.3%
	30 years	1	0,7%
	34 years	3	2.0%
	35 years	4	2.6%
	37 years	1	0.7%
	39 years	2	1.3%
	40 years	2	1.3%
	42 years	2	1.3%
	43 years	3	2.0%
	46 years	3	2.0%
	47 years	2	1.3%
	50 years	1	0.7%
	52 years	2	1.3%
	54 years	1	0.7%
	55-62 years	6	1.3% per participant
Total		42	100

Note: Industry Professional's Ages

Table 103

Number of Industry Professionals per Dentist's University Origin

Dentist's' University Name	Number of Industry Professionals Hiring Dentists	Percentages of Industry Professionals Hiring Dentists
UNIBE	4	2.6%
UASD	3	2.0%
UCNE	2	1.3%
PUCMM Santiago	2	1.3%
PUCMM (Santiago) and UCATECI	1	0.7%

Table 103 – Continued

Dentist's' University Name	Number of Industry Professionals Hiring Dentists	Percentages of Industry Professionals Hiring Dentists
PUCMM (Santiago), UCATECI and UTESA	1	0.7%
UASD and UCE	1	0.7%
UASD and UCNE	1	0.7%
UFHEC and UASD	1	0.7%
UASD, UNIBE and PUCMM (Santo Domingo)	1	0.7%
UNIBE and UASD	1	0.7%
UNIBE and UCE	1	0.7%
UNIBE, UASD and UFHEC	1	0.7%
UNIBE and UNPHU	1	0.7%
UNIBE, UNPHU and PUCMM (Santo Domingo	1	0.7%
UNIBE, UNPHU, PUCMM (Santo Domingo), PUCMM (Santiago) and UCATECI University	1	0.7%
UNIBE, UNPHU, PUCMM (Santo Domingo), PUCMM (Santiago), UASD and UCE,	1	0.7%
UNIBE, UNPHU, PUCMM (Santo Domingo), PUCMM (Santiago), UASD, UNURHEMOS, and UCATECI	1	0.7%
UNIBE, UNPHU, PUCMM (Santo Domingo), PUCMM (Santiago), UASD, UNIRHEMOS, UCE, and UOD University,	1.0.7%	
from UNIBE, UNPHU, PUCMM (Santo Domingo), PUCMM (Santiago), UASD, UNIRHEMOS, UCE, UTESA, UCNE and UOD	5	3.3%
UNIBE, UNPHU, PUCMM (Santo Domingo) and UASD	2	1.3%
UNIBE, UNPHU, PUCMM (Santo Domingo) and UFHEC	1	0.7%
UNIBE, UNPHU, PUCMM (Santo Domingo) and UNIRHEMOS. UASD,	1.	0.7%
UNIBE, UNPHU, and UASD	1	0.7%
UNIBE, UNPHU, UOD, an UASD	1	0.7%
UNIBE, UNPHU, PUCMM (Santo Domingo), PUCMM (Santiago), UASD, UCE, UCATECI, and UTESA	1	0.7%

Note: Industry Professionals per Dentist's University Origin

Table 104

Participant's Gender

Population Participating	Female *N*	Percentage	Male *N*	Percentage
Students	132	86.3%	21	13.7%
Total	153			
Practicing Dentists	90	83.3%	18	16.7%
Total	108			
Faculty	74	48.4%	18	18.3%
Total	153			
Industry Professionals	24	15.7%	18	11.8%
Total	42			

Note: Participant's Gender

Table 105

Number of Faculty Teaching by University and by University Type

University	*N*	Percentage (%)	Higher Institution Type
UASD	22	14.4%	Public
UCATECI	33	21.6%	Private (Catholic)
UCE	27	17.6%	Private
UCNE	20	13.1%	Private (Catholic)
UFHEC	6	3.9%	Private
UNIBE	10	6.5%	Private
UNIREMHOS	20	13.1%	Private
UOD	13	8.5%	Private
UNPHU	2	1.3%	Private
Total	153	100	

Note: Faculty Teaching by University and by University Type

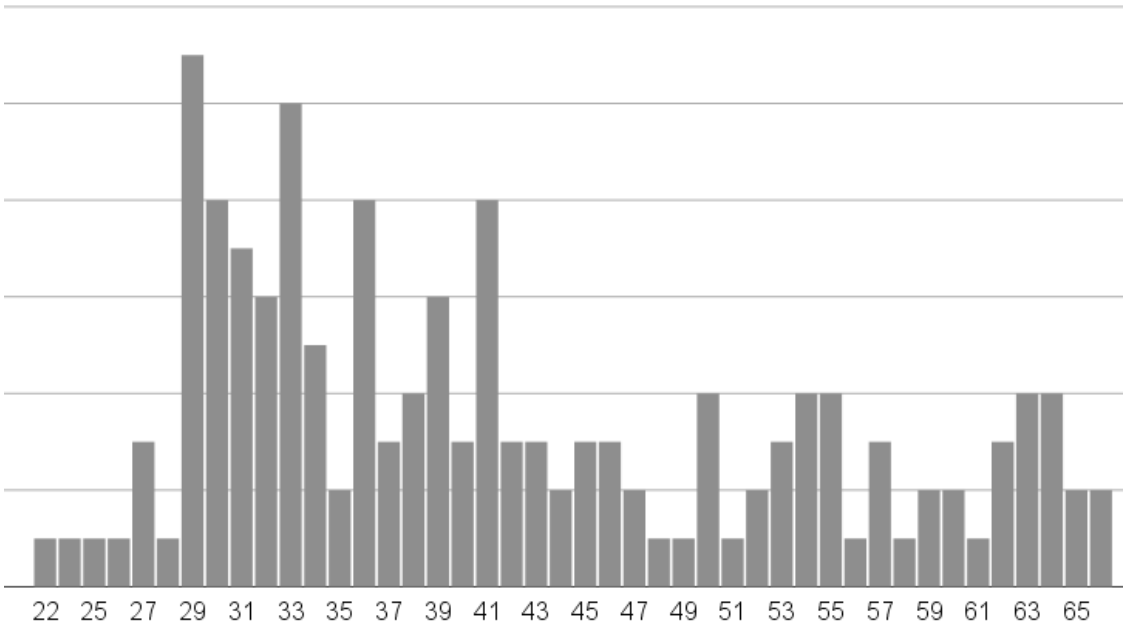

Figure 5. Age distribution of dental faculty Reyes's (2021) study.

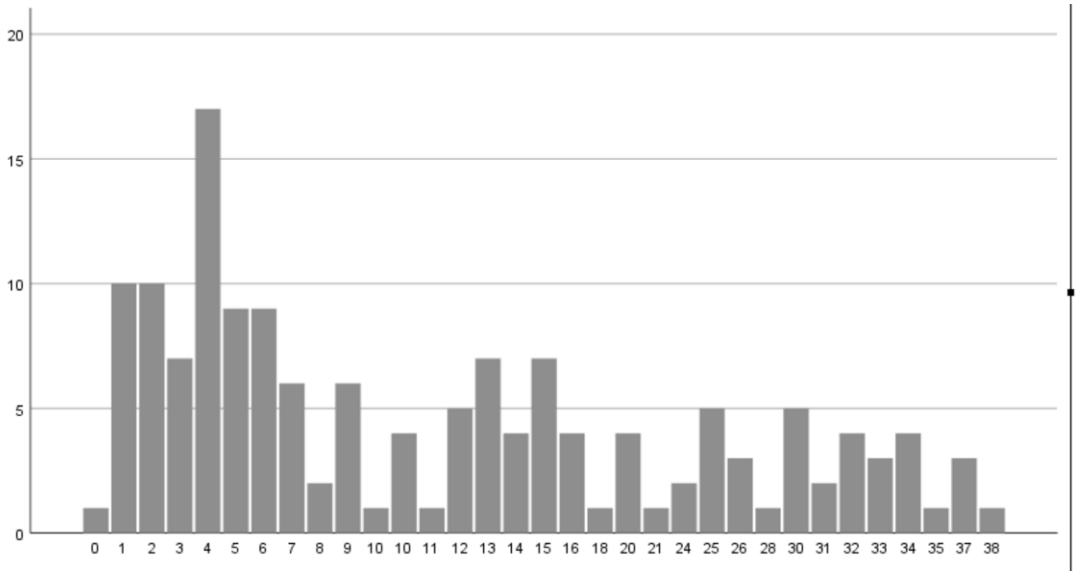

Figure 6. Years of teaching Dentistry.