

Frameworks to Guide Faculty Development for Health Professions Education: A Scoping Review

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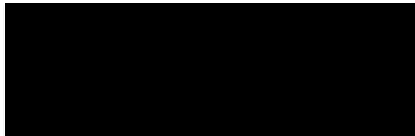
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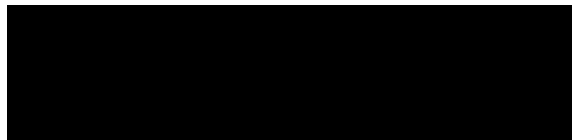
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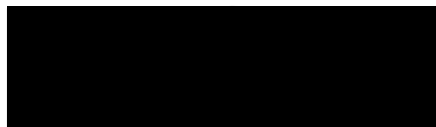
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Dedication

I would like to dedicate this thesis to my wife, Shelly. She has been a pillar of strength during our 33 years of marriage and military career, supporting my many educational endeavors, while also guiding the growth and development of our two wonderful children, Drew and Nichole into budding professionals. Without Shelly's support and the inspiration that our children have given me through the years, I'm convinced that I would have accomplished very little.

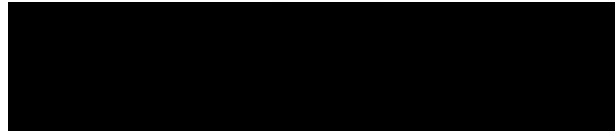
I would also like to dedicate this thesis to the outstanding faculty of the USU Postgraduate Dental College. Their energy and commitment to excellence has continually inspired me to be a better educator and has propelled me to never stop learning all I can to keep pace and better assist them.

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Abstract

Title: Frameworks to Guide Faculty Development for Health Professions Education: A Scoping Review

Introduction:

This research explored the existence of explicit definitions, guiding competency frameworks and learning theory to inform health professions education (HPE) faculty development (FD) programs. To accomplish this goal, the authors identified and analyzed frameworks based on thematic focus, scope of targeted faculty, and design structure.

Methods:

A scoping review was used to identify HPE literature between 2005 and 2020. Frameworks were characterized according the scope of the faculty targeted and design structure, then domains were grouped into topical categories for analysis.

Results:

Twenty-three manuscripts met the criteria for data extraction, of which only one (4.3%) described the explicit use of a learning theory and three (13%) included an explicit definition of FD. One (4.3%) utilized a recognized framework; whereas, 12 (52.2%) developed a novel framework based on an existing outline. Ten (43.5%) described de novo framework development. Only three (13.0%) utilized EPAs or similar constructs. Five (21.7%) programs targeted multiple health professions, eleven (47.8%) targeted a single health profession, and seven (30.5%) targeted a specific specialty within a health profession. Only two frameworks included a developmental component.

Discussion:

Few authors describe an explicit definition, learning theory, or use a preestablished framework when framing their FD programs. The use of EPAs to structurally link competencies to work practices is also uncommon, as well as the use of developmental structures designed to support progressive faculty development over time.

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CHAPTER 1: INTRODUCTION

Dental faculty roles have expanded significantly in the past decade and the need for additional educator development opportunities has been identified. To the list of traditional skills that have historically supported roles of teacher, clinician, researcher, and administrator in dentistry and other health professions have now been added a demand for greater application of learning theories, ways to facilitate the learning process, and an increased use of technology-supported instructional modalities.[1, 2] This increased emphasis on dental faculty development was recently demonstrated in a report describing key faculty development activities by 57 of the 75 US and Canadian dental schools. In this report significant increases were observed in 15 of 18 previously reported focus areas from 2001 to 2016, as well as the addition of 9 newly identified areas.[3] As represented in Table 1, all of the activities in the 2001 report continued to be listed and additional faculty development opportunities were added in 2016. The two activity focus areas that received the highest number of responses on the survey were for *Faculty Development Planning* and *Leadership Development*. However, the report did not mention the use of any explicit competency frameworks or theories that respondents used to assist in guiding their faculty development planning process. Therefore, although there is an identified need for additional faculty development activities to support the development of dental educators, there is a gap in the literature regarding recommended competency frameworks or other competency-based constructs such as entrustable professional activities (EPAs) that could assist health professions educators shape the developmental requirements and supportive activities to best meet the focus of an organization's unique educational mission as well as the developmental desires of individual faculty members.

Table 1		
Activities in 2001 report	Statistically Significant increase in 2016 report	New Activities in 2016 Report
Leadership Development	Yes	
Assessment of Teaching	Yes	
Assistance with Educational Research	Yes	
Conflict Resolution	Yes	
Faculty Development Planning	Yes	
Course Development	Yes	
Fostering and Advising on Mentoring	Yes	
Team-Building	Yes	
Workshops on Methods of Teaching	Yes	
Peer Review of Teaching	Yes	
Program/Course Evaluation	Yes	
Teaching with Instructional Technologies	Yes	
Providing Expertise on Teaching & Evaluation	Yes	
Preparing for Post-tenure Review	Yes	
Consultation on Salary Equity	Yes	
Individual Consultation on Faculty Development	No	
New Faculty Orientation	No	
Preparing for Promotion & Tenure	No	
		Faculty Career Planning
		Programs for Junior Faculty
		Faculty Development Website
		Faculty Recognition/awards
		Calibrations
		Development in Inter-professional Education
		Programs for Mid-Level Faculty
		Programs for Senior Faculty
		Building Teaching Portfolios

This increased focus on the development of educator skills has also been demonstrated by significant growth in the number of health professions education (HPE) programs in the US, from only a handful in 2002 to over 140 Masters and Doctoral level programs currently.[4] However, since the structures of these programs focus more on inter-professional educational domains and competencies for its various learners, these program's competencies may not fully encompass the specific work activities required of more discipline-specific faculty groups (or sub-groups) within the various healthcare disciplines (e.g., dental educators). Within a specific healthcare discipline such as dentistry, it could be hypothesized that focused faculty development activities for dental educators would better address the needs of educator

sub-groups such as junior versus senior-level dental educators, clinical versus didactic dental educators, or pre- versus post-doctoral dental teaching faculty. Additionally, it could also be envisioned that the degree of needed emphasis placed on the various competency areas would be influenced by the specific dental work environment, the predominant activities of dental educators that are performed in that environment, and the career progression focus of the individual dental faculty members. In the military context, one could also hypothesize that there would also be an increased emphasis placed on leadership competencies, since faculty may be required to utilize skills in this domain earlier in their educator careers in comparison to their civilian colleagues. Additionally, operational military requirements could be expected to drive a greater emphasis on unique clinical instructional areas that would be needed to care for patients in austere environments with mobile dental equipment.

As outlined in a recent study[5] on perceived needs for faculty development, factors such as the specific healthcare discipline, rank, gender, education and years of experience in academics all were demonstrated to impact perceived faculty development requirements. These findings supported the need to address the unique needs of individual health professional groups when planning professional development activities and subsequent reports have concluded that faculty developmental activities should target the needs of specific faculty groups such as dental educators.[6] Thus, the need for an individualized assessment of discipline-specific (medicine, dentistry, nursing, pharmacy) health professional faculty development has been identified; however, there is a gap in our understanding of what differences, if any, exist between these various disciplines and between sub-groups (or sub-specialties) within each discipline. It could also be hypothesized that educator requirements for health professional disciplines share common competency domains and specific competencies and differ only in the specific activities that define each unique environment, the specific academic roles within these environments, and the resultant degree of emphasis placed upon each competency area.

Military dental educators comprise one such discipline-specific group that would be well-suited for study and comparison to other health professional disciplines, as well as other sub-groups (including

specific sub-specialties) within the dental discipline. This fairly homogeneous faculty group consists of over 450 members teaching in 43 postgraduate residency programs, each with similar environments and teaching activities that would drive common developmental requirements. Additionally, these military dental educators are embedded in military units that accomplish operational mission requirements in support of their respective branch of service (Army, Navy, or Air Force) while simultaneously performing their specific academic missions. However, even with this unique teaching environment, it could be hypothesized that military dental educators share a common set of competency domains and specific competencies with other health professional disciplines and differ only in the specific activities that define their unique environment, their specific academic roles, and the degree of emphasis placed upon each competency area.

Employing the concept of Entrustable Professional Activities (EPAs) would appear to be well-suited to characterize the educator activities of this faculty group. As originally presented by ten Cate in 2005[7], EPAs exhibit the following attributes:

- They are part of essential professional work in a given context;
- They must require adequate knowledge, skill and attitude, generally acquired through training;
- They must lead to recognized output of professional labor;
- They should usually be confined to qualified personnel;
- They should be independently executed;
- They should be executable within a time frame;
- They should be observable and measurable in their process and their outcome, leading to a conclusion ('well done' or 'not well done'); and
- They should reflect one or more of the competencies to be acquired.

As additionally described in 2007[8], EPAs must be “disentangled” from competencies, which are best defined as attributes or qualities that a person possesses. In other words, an EPA would constitute a work practice or activity and a competency would constitute the personal quality or skill that the educator possesses that allows them to accomplish the EPA. EPAs would consist of elements of professional work, each of which requires the use of various competencies to perform.

The EPA construct has been utilized to define entrustable activities for dental students[9] and for a more-general health professions education (HPE) program for multiple health profession disciplines.[10] However, to date it has not been used as a framework to identify key developmental activities for dental faculty.

Purpose & Theoretical Framework

This research was completed to identify the extent to which competency frameworks, competency-based frameworks such as EPAs, or other theoretical constructs exist in the literature and are used by health professions educators to inform developmental programs and activities for their faculty. To accomplish this goal, a scoping review was conducted to characterize the extent to which frameworks are utilized in health professions education (including dental education) and informed by explicit theories. In addition to providing a set of standardized definitions for this future research, the scoping review methodology provided a framework to map available evidence for planning, described the use of contrasting approaches and inform future development of a competency framework that will support the development of EPAs for military dental educators. We also sought to define key terms for purposes of competency frameworks and EPAs from this literature search. This review followed the process outlined by Levac et al[11], which expands upon originally published scoping methods.[12] Search parameters were established to search traditional literature databases, as well as grey literature. This research defined the current approaches related to the choice of faculty developmental activities in health professions educational settings and better identified potential gaps in related research.

Research Questions

This research was designed to answer the following questions:

1. What competency frameworks, EPAs, and/or other theoretical constructs exist in the literature for faculty development programs or activities in health professions education (HPE)? and,
2. How are frameworks utilized by HPE entities to inform developmental programs for their faculty?

CHAPTER 2: SUBMITTED MANUSCRIPT

Frameworks to Guide Faculty Development for Health Professions Education: A Scoping Review

(accepted for publication in the Journal of Continuing Education in Health Professions)

Abstract

Introduction:

The authors explored the existence of explicit definitions, guiding competency frameworks and learning theory to inform health professions education (HPE) faculty development (FD) programs. The authors analyzed identified frameworks based on thematic focus, scope of targeted faculty, and design structure.

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A scoping review was used to identify HPE literature between 2005 and 2020. Frameworks were characterized according the scope of the faculty targeted and design structure, then domains were grouped into topical categories for analysis.

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Discussion:

Few authors describe an explicit definition, learning theory, or use a pre-established framework when framing their FD programs. The use of EPAs to structurally link competencies to work practices is also uncommon, as well as the use of developmental structures designed to support progressive faculty

development over time.

Keywords: scoping review, competency frameworks, 23 entrustable professional activities, faculty development

Metaphorically, health professionals who teach have stepped into two professional environments, each requiring a unique set of knowledge, skills, and attitudes (e.g., competencies). While standing in the first professional environment, whether it be medical, dental, nursing, or other health profession, these individuals typically have a good understanding of the required competencies for certification and licensure through years of dedicated study, as well as the other frameworks used to enhance or acquire additional competencies through continuing professional development. In medicine, these professional competencies have been posited using frameworks such as CanMEDS and the ACGME.[13, 14] However, when stepping into the arena of professional education where the concept of “faculty” is ever-expanding, the required competencies are typically less familiar, inconsistently mandated by academic entities, and frameworks for faculty development (FD) have not been as well described.[15] Consequently, these professional faculty would benefit from the guidance of more explicitly defined developmental frameworks that target their individual needs and preferences, both of which have been reported to differ for specific faculty groups in health professions education (HPE).[6]

Faculty Development has historically been defined narrowly as strategies to improve a faculty member’s *teaching* performance,[16] , but within health professions education has been expanded to include the activities in which staff participate to improve their knowledge and skills as teachers, educators, leaders, managers, researchers, and scholars.[17] This expanded focus could be warranted, since FD activities been shown to enhance the effectiveness of clinician educators.[18] FD has also been conceptualized to constitute an essential support mechanism to assist faculty members respond to the challenges of their multiple roles and evolving responsibilities.[19] Characterizing FD as a support mechanism for evolving roles and responsibilities would be timely and would be in alignment with reports that academic health centers are facing increasingly complex training environments that have resulted in statements that the “faculty characteristics that led to success in the last century are no longer sufficient in this one”.[20] Therefore, describing competency frameworks that support the progressive development of desirable faculty characteristics would enhance the role FD plays in “promoting academic

excellence and innovation”.[21] Additionally, this effort would help address specific criticisms that there is an “absence of a formal pathway to teaching competence” for health professions educators[22] and that FD programs are based on generic “wish lists” rather than a structured curricular framework.[23]

We believe that the analysis of multiple competency frameworks would be an appropriate strategy when viewing FD programs within the vast scope of health professions education (HPE) where differing focus areas, priorities, and preferences have been described. For example, as reported by Schönwetter, et al[5], different FD perspectives have been observed across health professions based on factors such as discipline, academic rank, education, gender, and years as an academician. Therefore, an analysis of competency frameworks being used for the development of specific faculty groups composed of members from multiple health professions, singular health professions, or specialties within various health professions may provide important insights about how shared and unique needs of these defined groups could inform future FD frameworks.

Reviewing the multiple perspectives within HPE, as well as those from higher education in general, may provide a more holistic approach toward defining desirable competencies for HPE and may also be beneficial when designing FD programs that support unique needs of defined faculty groups. From higher education sources, competencies for teaching have been defined as “an integrated set of personal characteristics, knowledge, skills, and attitudes that are needed for effective performance in various teaching contexts”.[24] Although this definition is broad, it includes a description of how required faculty characteristics should relate to teaching performance in a certain context. This perspective has been supported by other authors[25, 26]) who describe *teaching* as a complex activity that is always executed within a specific context. Therefore, this definition provides a useful lens for the description of unique teaching activities for defined faculty groups (teaching context) and the underlying characteristics (teaching competencies) required to perform them. Additionally, this definition also relates to that offered by Ten Cate[7] for an Entrustable Professional Activity (EPA), which describes a specific activity that demonstrates the use of key competencies and which can also be used to assess the level of

entrustment the teacher has placed in their learner's abilities to utilize the competencies. Although EPAs have only recently been applied to HPE faculty development[23, 27, 28]), they could be appropriate for that use as they integrate the priorities and context of HPE with established teaching attributes for higher education.

The current literature highlights multiple competency frameworks for the development of health professions educators, each of which posits the importance of various competency domains and provides unique perspectives.[20, 29-33] However, a recent report,[34] only identified two FD frameworks[27, 35] based on EPAs that align competency domains with specific work-required activities. The framework developed by the College of Family Physicians of Canada[35, 36] is unique in that, although it is based on the EPA concept, it uses the term Fundamental Teaching Activities (FTAs) for characterization to emphasize that educators are licensed professionals who are already entrusted to teach.

We designed this scoping review to explore the use of explicit FD definitions as a means to illuminate the developmental intent of current FD programs in HPE and map the depth and breadth of current literature pertaining to the use of learning theories, competency frameworks and EPAs in program design. We also sought to describe the focus of included competency frameworks by identifying the use of specific competency domains (subject area focus), the scope of targeted faculty (multi-profession, single profession, or specialty within a profession), and the structural design for comparison. Structural design was defined by the intended focus of included competencies in each framework as either: only defining knowledge, skills, and attitudes (KSAs, *Analytic* structure), linking defined KSAs to work practices or activities (*Synthetic* structure), or also framing the development of KSAs over time (*Developmental* structure). We believe that a comparison of frameworks on the basis of structural design would provide insight into the intended application of competencies included in the frameworks. Specifically, we sought to answer the following research questions: 1. "What competency frameworks, EPAs, and/or other theoretical constructs exist in the literature for HPE FD? 2. How are they utilized by HPE entities to inform developmental programs for their faculty? By answering these questions, we

sought to provide additional insight regarding the explicit use of competency frameworks in FD and provide faculty developers with additional context to guide design efforts that address the specific needs of their faculty learners.

METHODS

We conducted a scoping review, using the steps proposed by Levac et al[11] (Figure 1). This approach builds upon previous scoping review frameworks[12]) and includes steps to: 1. identify the research question; 2. identify relevant studies; 3. select appropriate studies; 4. chart the data; and 5. collate, summarize, and report the results.

Step 2 was completed following consultation with an information scientist and included literature searches of PubMed, Embase, Web of Science, CINAHL, PsychINFO, and ERIC. This step was also informed by the literature search strategies identified in the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA-ScR) guidelines.[37] In order to identify any unpublished FD program frameworks web searches of Google, NYAM Grey Literature Report, NTIS, CRD, and GovInfo were also conducted. Search terms used were: clinical competence, Entrustable Professional Activities, EPAs, competency frameworks, faculty, professional development, faculty development, program developments, lifelong learning, and competence development. Boolean operators “OR” and “AND” were utilized to combine the search terms, resulting in the final search strategy: (("Clinical Competence"[Majr] OR "Entrustable Professional Activities" OR "EPAs" OR "competency frameworks")) AND (((("Faculty"[Mesh] OR faculty) AND ("professional development" OR "faculty development" OR "program development" OR "lifelong learning" OR "competence development")))). Since the concept of EPAs was first published in 2005, additional limits were placed on the search to include only English language literature sources published after 2004.

Figure 1

Scoping Review Summary

<p>Stage 1: Identify the Research Question</p> <ul style="list-style-type: none"> What competency frameworks, EPAs, or other theoretical constructs are utilized by educational healthcare entities to inform developmental programs and activities for their faculty?
<p>Stage 2: Identify Relevant Studies</p> <ul style="list-style-type: none"> Published literature searches were conducted utilizing the search terms: Health Professions, Professional Development, Faculty Development, Faculty Training, Entrustable Professional Activities, EPAs, and Competency Frameworks. <ul style="list-style-type: none"> PubMed 239 Embase 97 Web of Science 10 CINAHL 7 PSychINFO 0 ERIC 0 Online and unpublished sources were searched (duplicates identified in published literature search were deleted). <ul style="list-style-type: none"> Google 3 NYAM Grey Literature Report 0 NTIS 0 Centre for Reviews and Disseminations (CRD) 0 GovInfo 0
<p>Stage 3: Study Selection</p> <ul style="list-style-type: none"> 353 Abstracts were screened by the first and second authors. 72 met the inclusion criteria and were included in a full-manuscript screening following agreement by both authors. 1 online, unpublished resource was also included for full-screening.
<p>Stage 4: Charting the Data</p> <ul style="list-style-type: none"> 23 (22 published + 1 online/unpublished) manuscripts were identified following inclusion agreement by both first and second authors and data was extracted utilizing a standardized extraction Google Form questionnaire.
<p>Stage 5: Collating, Summarizing, and Reporting Results</p> <ul style="list-style-type: none"> Textual and numerical data were exported and collated directly from the Google Form into a Google Sheet spreadsheet. Data themes were identified and various perspectives were explored to compare and contrast the data obtained from the frameworks. The structural type of each framework was identified according to accepted definitions of Ten Cate & Pangaro (2013; Analytic, Synthetic, or Developmental). The scope of each framework was identified according to its' intended focus (Multiple Health Professions, Single Health Profession, or Specialty within a Profession)
<p>Stage 6: Consultation</p> <ul style="list-style-type: none"> Methods, Data, and Reports were discussed with the third and senior authors to confirm the methodological rigor, the pertinence of the data, and potential applicability to the construction of future faculty development frameworks for the health professions.

The abstracts of the identified manuscripts were imported into Covidence (Veritas Health Innovation Ltd, Australia) to assist the review process. Step 3 was completed by the first (DF) and second authors (SI) with screening of abstracts to determine appropriateness for full-manuscript review. Manuscripts were included that defined a competency framework, EPAs or FTAs, or other theoretical construct to describe a FD program that included multiple domains. Manuscripts were excluded if the

described frameworks for FD activities or courses that were limited in scope to a single domain. Any non-concurrence regarding inclusion was discussed between these two reviewers until concurrence was reached. Although a third reviewer was available to assist in the case of continued non-concurrence, their involvement was not required. Full manuscripts were reviewed using the same process to reach consensus of both first and second authors for inclusion and data extraction. A standardized data extraction form was developed by all the study authors and we charted textual and numerical data into a Google Sheets spreadsheet (Stage 4). Data was collated and synthesized for reporting the results obtained from each question on the data extraction form (Step 5).

To provide additional insight into and analysis of identified frameworks each was defined according to structural type as either being based on competencies-alone (coded as *Analytic*), competencies linked to work practices (coded as *Synthetic*), and/or describing the progression of competency development over time (coded as *Developmental*). According to previous authors[38], *Analytic* frameworks are defined by competencies that describe desired knowledge, skills, and attitudes (KSAs), *Synthetic* frameworks are defined by competencies that relate directly to tasks as Entrustable Professional Activities (EPAs) or as other authors have described as Fundamental Teaching Activities (FTAs)[35], and *Developmental* frameworks are defined by a progression of competencies through various levels of development. For the purposes of our analysis, rather than considering these types to be distinct, we considered Synthetic frameworks to be an extension of Analytic, either of which may include a Developmental component describing progressive competency development over time.

For insight into the intended faculty group focus, identified frameworks were also delineated based on their scope, as either directed towards multiple health professions, a single healthcare profession, or a specific specialty within a healthcare profession. These faculty group delineations were chosen for comparison to allow the identification of competency differences that would be revealed as faculty move from a broad healthcare focus (multi-profession), to a narrower focus (single profession), and then to a very specific focus based on more specialized work practices (specialty within a profession).

Additionally, competency domains and subdomains within each framework were tabulated for comparison within appropriate topical headings developed by the authors.

RESULTS

Characteristics and Focus of Included Studies

As demonstrated in Figure 1, 356 manuscripts were identified from searches of published and online unpublished sources, the abstracts of which were screened by the first and second authors. Screening of these abstracts revealed 73 (72 published + 1 online unpublished) that proceeded to full manuscript review. Following full-manuscript review, 23 (22 published + 1 online unpublished)[27, 29-33, 35, 39-54] met the inclusion criteria. The most common reason for exclusion was the determination that the manuscript defined a framework for a specific course or activity focused on a singular competency domain rather than a FD program comprised of multiple domains.

Of the 23 manuscripts included in final data extraction (Table 2), 16 (69.6%) were original research papers, 6 (26.0%) were review papers, and the remaining manuscript (4.4%) was a professional organization publication. Seventeen (74.0%) were from North America and the remaining 6 (26.0%) were equally divided between Europe and Asia. Fourteen (60.9%) had a primary medical, 3 (13.0%) had a nursing, one (4.3%) had a primary dental, and one (4.3%) had a veterinary medicine focus. The remaining 4 (17.5%) were focused on health professions education in general.

Table 2						
Author(s)	Year	Type	Location	Focus	Used Established Framework/Model*	Developed a Framework/Model*
Iqbal et al	2019	Research Paper	Asia	Health Profession		EPAs for small group facilitators
Keshmiri et al	2019	Research Paper	Asia	Health Profession	CBE Framework [55]	CBE Framework for PhD HPE
Zaweski et al	2019	Research Paper	N. America	Medicine	Srinivasan FD Framework [29]	Physician Assistant Educator Competencies
Brink et al	2018	Research Paper	N. America	Medicine		Novel Framework/Competencies
Merritt et al	2018	Review Paper	N. America	Medicine	Cognitive Apprenticeship Model[56, 57]	Novel Framework/Competencies
Daouk-Oyry et al	2017	Research Paper	Asia	Medicine		Novel stratified competency framework based on roles
Paige et al	2017	Research Paper	N. America	Medicine		Referenced Steinert et al for effective FD
Tucker	2017	Review Paper	N. America	Medicine		Novel Framework/Competencies for Medical Educators
Walsh et al	2017	Research Paper	N. America	Medicine	Fundamental Teaching Activities Framework[58]; Adult Learning Theory[59]; Reflective Practice[60]; Competency-Based Medical Education[55]; Canadian National Curriculum for Family Medicine Residents[36]	Fundamental Teaching Activities Framework
Gruppen et al	2016	Review Paper	N. America	Health Profession	CBE Framework[55]	EPAs for HPE Program
Gorlitz et al	2015	Research Paper	Europe	Medicine	Srinivasan FD Framework[29]	KLM (Model of Core Competencies for Medical Teachers)
AoME [47]	2014	Grey Literature	Europe	Health Profession		Professional Standards Framework
Mookherjee et al	2014	Research Paper	N. America	Medicine	Stanford FD Program Framework[61]	Structured Peer Observation of Teaching Framework
Sherbino et al	2014	Research Paper	N. America	Medicine		Novel Clinician-Educator Framework/Competencies
Srinivasan et al	2011	Research Paper	N. America	Medicine		"Teaching as a Competency" Framework
Heflin et al	2009	Research Paper	N. America	Medicine		Novel framework using roles to describe clinician-educators
Horner et al	2009	Research Paper	N. America	Nursing	Clinical Scholar Model[62]	Novel course using the Clinical Scholar Model
Molenaar et al	2009	Research Paper	Europe	Veterinary Medicine		Novel competency framework for Medical, Dental and Veterinary Medicine faculty
Jarrett et al	2008	Review Paper	N. America	Nursing	Clinical Scholar Model[62]	Novel Clinical Scholar Curriculum
Harris et al	2007	Research Paper	N. America	Medicine		Novel Faculty Competency Assessment Checklist for medical faculty
Kowalski et al	2007	Review Paper	N. America	Nursing	Clinical Scholar Model[62]	Novel Clinical Scholar Program
Hand	2006	Research Paper	N. America	Dentistry	Boyer's Model of Scholarship[63, 64]	Novel competency framework for dental faculty
Warner et al	2005	Review Paper	N. America	Medicine	Junior Faculty Development Model[65]	

Use of Learning Theory, FD Definitions, Competency Frameworks, or EPAs

Only one (4.3%) described the explicit use of a learning theory to guide program design[35] and three (13.0%) of the included manuscripts included an explicit definition of FD[39, 44, 54], two of which

utilized the definition proposed by Steinert et al.[66] As represented in Table 2, only one (4.3%) author designed their FD program within a recognized competency framework; whereas, 12 (52.2%) developed a novel competency framework based on the components of a recognized framework. As represented (Table 1), the most common frameworks used to inform new frameworks by these authors were those published by Frank[55], Srinivasan[29], or Preheim[62]. Ten (43.5%) described de novo development of a competency framework for their FD program and only three (13.0%) explicitly linked competencies to work practices via EPAs or similar constructs such as Fundamental Teaching Activities (FTAs). The frameworks utilized and/or developed by these authors with associated references are listed in Table 2.

Structural Type and Scope of Frameworks Described

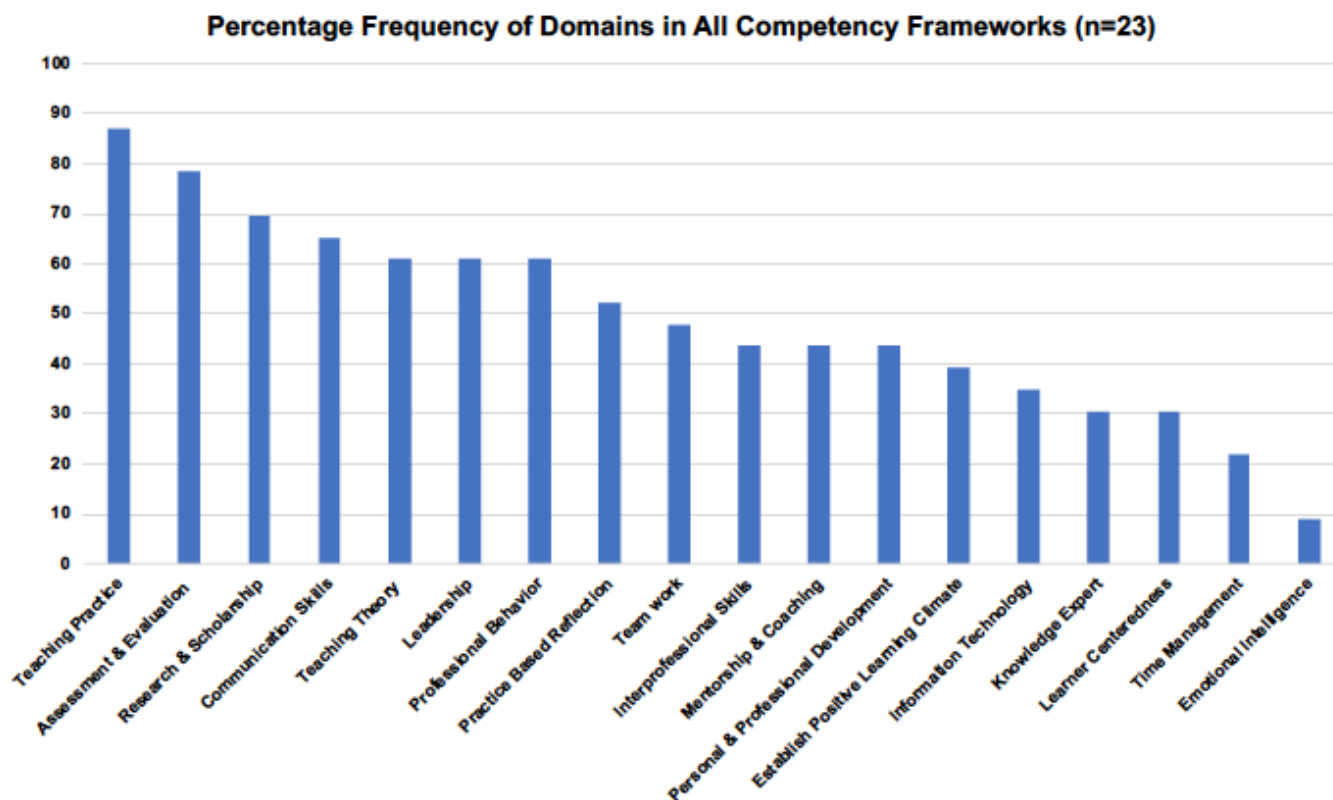
Using recognized definitions of framework types for assessing competencies,[38] the structural type of framework described in each of the 23 manuscripts was determined. Based on these methods, 20 (87.0%) were coded as Analytic and the remaining three (13.0%) were Synthetic. Only two of the frameworks (one Analytic and one Synthetic) included an explicit Developmental component.

When analyzing the intended scope of each competency framework, five described frameworks that were applied to multiple health professions (including various combinations representing the professions of medicine, dentistry, nursing, veterinary medicine, pharmacy, applied medical sciences, and health professions education in general), eleven were applied to a single health profession (including medicine, nursing, physician assistant, and dental), and seven were directed to a specific specialty, all of which were within the profession of Medicine (including family medicine, internal medicine, emergency medicine, hospitalist, medical surgery, and psychiatry) demonstrating the vastness of the medical education literature pertaining to this subject in comparison to other health professions. Table 3 provides the list of these manuscripts, the breakdown according to framework type and scope, as well as the competency domains and subdomains included in each framework.

There was wide variation in the terminologies used to identify the various competency domains and sub-domains in the included manuscripts. Differences in terminology used in describing the various competencies were resolved by the primary author, when required, and consolidated into a single descriptive category. Therefore, themes were grouped into common competency domain terms. For example: domains such as Teaching Methods, Teaching & Facilitating Learning, Instructional Design, Curriculum Design & Implementation, and Teaching in general were grouped under the broad heading of Teaching Practice in Table 3. The heading of Leadership included other terminologies, such as Leadership & Management, and Administrative & Managerial Skills.

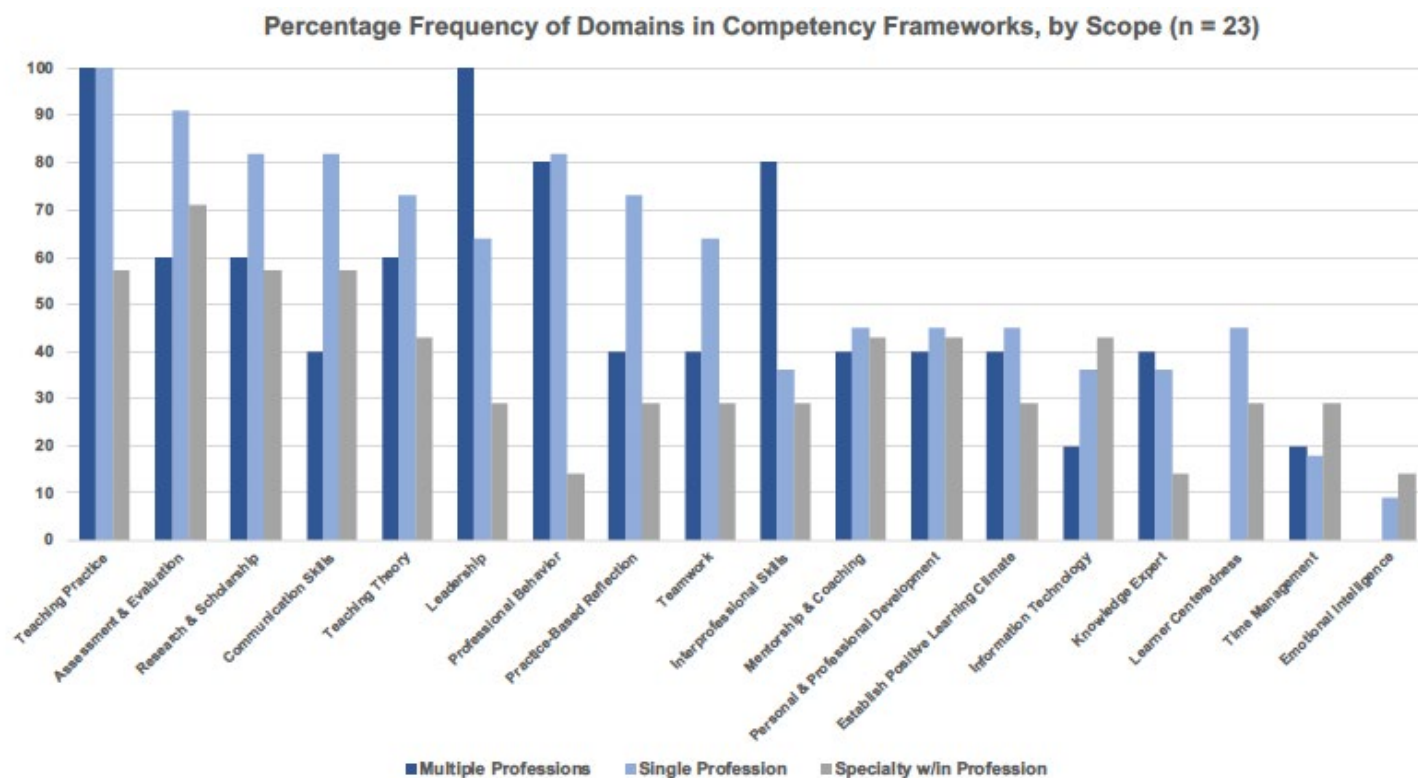
In order to compare the use of various competency domains in the included frameworks, the percentage representation for each competency domain was calculated. As represented in Figure 3, ranked in order of high to low occurrence, the competency domains represented in the majority (50% and above occurrence) of all included frameworks was described. This revealed eight competency domain categories that were most frequently included in the frameworks as a whole. These included: Teaching Practice, Teaching Theory, Assessment and Evaluation, Research and Scholarship, Leadership, Communication Skills, Professional Behavior, and Practice Based Reflection.

Figure 2.



Differences regarding included competency domains were observed when frameworks were grouped according to the *scope* of targeted faculty (Figure 4). For those frameworks that focused on the Multiple Health Professions ($n = 5$), Interprofessional Skills replaced Communication Skills and Practice Based Reflection was not included in the majority of frameworks, resulting in only seven prominent domain categories. Additionally, Learner Centeredness and Emotional Intelligence were not included in any frameworks focused on multiple health professions.

Figure 3.



For those frameworks that focused on a Single Health Profession (n = 11), the competency domain of Teamwork was included in the majority of frameworks, resulting in nine competency domains represented in over 50% of the frameworks based on this grouping.

All of the frameworks that focused on a Specialty within a Health Profession were within the profession of medicine (n = 7) including family medicine, internal medicine, emergency medicine, hospitalist, medical surgery, and psychiatry. For these specialties, only four competencies/domains were included in over 50% of the frameworks, including Assessment and Evaluation, Teaching Practice, Research and Scholarship, and Communication Skills.

DISCUSSION

This scoping review was conducted to evaluate the explicit use of FD definitions in the descriptions of FD programs in HPE and map the depth of current literature pertaining to the use of learning theories, competency frameworks and EPAs in program design. By analyzing the use of specific competency domains, the scope of targeted faculty, and the structural design of included frameworks, we observed aspects of current program design that could be used to inform future FD program design and better address the needs of various faculty groups.

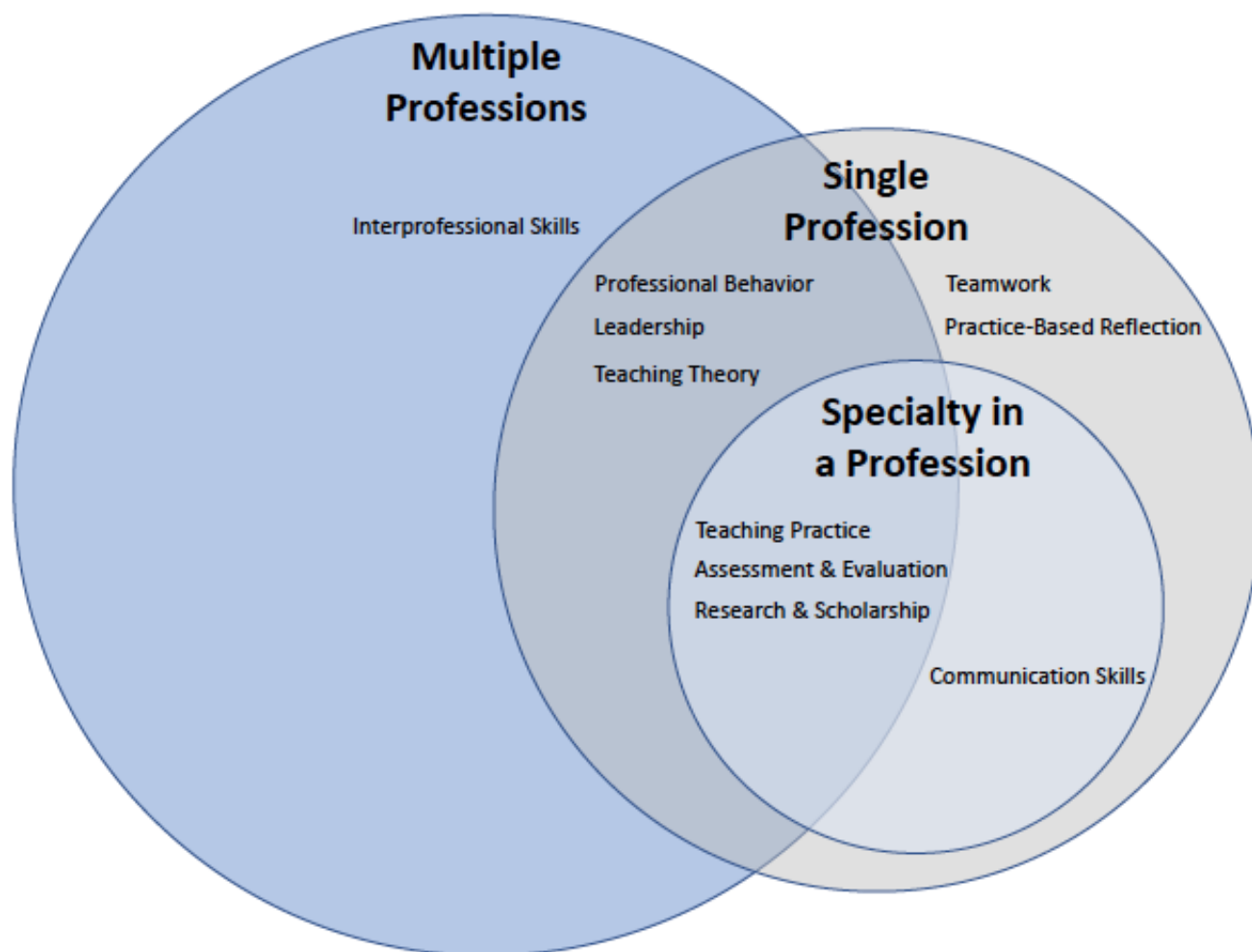
The most commonly stated definition of FD observed during this scoping review was that offered by Steinert et al, as “Faculty development (FD) is defined as a set of activities designed to prepare the faculty for their various roles, as teachers, researchers, and administrators”.[66] This definition provides a focus and directive to prepare faculty for various academic roles. However, by adding the analysis of this scoping review we gain further knowledge pertaining to how this directive is currently being accomplished in health professions education, the learning theories being used to inform FD competency frameworks, and how FD strategies could address the continued development of faculty.

Differences based on Intended Faculty Group (Scope)

When comparing the occurrence percentages of the various competency domains, differences were observed between competency frameworks targeting multiple health professions, single health professions, and specialties within a profession. As viewed in the Venn diagram (Figure 5) and described previously in this report, the competency domain described as Interprofessional Skills replaced Communication Skills when targeting multi-profession faculty groups, but may not represent a true difference in required competencies. Interprofessional Skills may represent merely a sub-group of the broader category of Communication Skills and could more accurately describe the communication competency desired when faculty groups from different professions work together (Interprofessional Practice, for example). It may simply represent a more appropriate semantic approach when viewed in the multi-profession context. Additionally, the argument could also be presented that the competency

domain category of Teamwork could also be nested under the broader category of Interprofessional Skills, or vice versa, when appropriate. Therefore, providing a means to more explicitly define the competency domain categories within a FD framework could be helpful to future initiatives by better linking terminologies used to intentionally desired outcomes.

Figure 4



The number of competency domains included in the majority of frameworks that targeted single health professions was expanded to nine with the addition of Teamwork. However, there is an interrelationship and overlap present between many of the competency domain categories that should be

considered. Teamwork could effectively be nested under the broad category of Interprofessional Skills or represent a more appropriate term when describing the need for collaboration within a specific profession in comparison to working relationships between members from different professions, once again demonstrating the benefits of using more explicit definitions. Therefore, additional research would be required to determine if this simply represents a different interpretation or definition of broader competency categories when applied to a single health profession or if it truly describes a unique requirement focus for single profession groups in comparison to multi-profession or specialty faculty groups.

Only four of the seven shared competency domain categories were present in the majority of the competency frameworks directed toward specialties within a health profession and all were within the profession of Medicine. This could represent the greater emphasis on the unique requirements that define given specialties and the need to focus on unique work practices and skills in comparison to single or multi-professions faculty groups, as represented in less overlap on the Venn diagram (Figure 5). This more detailed emphasis on competencies was also demonstrated in the increased occurrence of Information Technology, represented in 43% of frameworks targeting specialty faculty groups, when compared to only 20% for multi-profession frameworks. Notably, the competency domain of Knowledge Expert, which was represented in 36-40% of the multi-profession and single profession groups, was only present in 14% of the Specialty frameworks. Since it could be assumed that Knowledge Expert is an important and highly desirable faculty characteristic, this low percentage of occurrence in the Specialty frameworks may demonstrate the assumption that specialists, by definition, are considered to be experts in a more focused aspect of a health profession and thus require less focus in that competency area. There could also be an assumption that the Knowledge Expert competency category is best developed via a specialist's unique continuous professional development (CPD) process rather than via more academically focused FD.

Differences based on Type of Framework

As previously described, 20 (87.0%) of the frameworks reviewed were coded as Analytic and the remaining three (13.0%) were Synthetic. Only two of the frameworks (one Analytic and one Synthetic) included an explicit Developmental component. Linking competencies to work practices via Synthetic frameworks directly addresses two of the four learning principles described by Malcolm Knowles in proposing his Adult Learning Theory[59], the one learning theory revealed in this review. His suggestion that adult learning have *Immediate Relevance* to a job and that it be *Problem-Centered*, rather than content-oriented, more-directly supports the use of a Synthetic approach when using his theory as the basis for framework design. However, the use of Analytic frameworks may be equally useful for FD if aligned with other learning theories deemed important for professional development, such as those for Professional Identify Formation[67] or Deliberate Practice.[68] This highlights the importance of explicitly defining an underlying learning theory when describing a particular FD framework and demonstrating how that theory specifically aligns with the needs of the faculty learners. In other words, the design of FD programs would benefit from a greater degree of intentional theoretical grounding and faculty centricity based on individualized outcome requirements.

As previously stated, health professionals who teach have a foot in their professional field and one in the broad field of education. They are expected to bring the competencies of their particular health profession and utilize educational theory and methods to teach others to “do what they do”. Therefore, by explicitly identifying the underlying learning theories used to inform framework design (whether Analytic or Synthetic), may provide a means to obtain better alignment between targeted competencies and the desired outcomes of FD programs.

A need for more comprehensive Development of Faculty

Ten (43.5%) of the frameworks (Figure 2) included a competency domain or sub-domain that addressed Personal &/or Professional Development. However, only 2 (8.7%) of the frameworks reviewed

included a clearly defined Developmental structure to guide faculty through progressive stages, steps, or levels for academic career advancement. This may reinforce the criticism previously mentioned that there is an “absence of a formal pathway to teaching competence” for health professions educators[22].

Faculty are expected to not only educate their students but also mentor and lead fellow faculty members at prescribed points along their developmental path. Therefore, this may signal a significant opportunity to develop future FD frameworks that holistically address progressive attainment of competencies that better support academic career development. Integrating a Developmental component or structure, such as the Boyer’s Model of Scholarship[63] with a competency framework could provide a means to link the development of desirable competencies through FD to the progressive development of scholarship in Teaching, Discovery & Integration (Research), & Application (Professional and Clinical Service) for academic career progression. This strategy may have the additional benefit of increasing faculty “buy in” to a framework that links the development of competencies to important developmental assessment categories used for faculty appointment, promotion, and tenure decisions.

RECOMMENDATIONS

Although the primary intent of this paper was to identify the “current state” and scope of the literature regarding the use of explicit FD definitions, learning theories, and competency frameworks in HPE FD program design, some general recommendations can be offered for consideration when designing faculty development programs. First, describing an explicit theoretical basis provides a means to align the content of an activity to intended outcomes and providing a clear definition of FD provides context that reduces the need for inference of that intent. Second, terminology seems to matter and our findings suggest it should be tailored to the faculty group being developed. For example, competency domains of Communication Skills, Interprofessional Skills, and Teamwork, when loosely defined can be interpreted very differently based on the scope of the faculty learners, their particular learning focus, and their differing work practices. Third, the use of *Synthetic* framework structures (utilizing EPAs or FTAs)

may provide enhanced faculty-centricity when designing FD programs for healthcare specialists with more-specialized work practices. Based on our findings, we believe the use of more explicit definitions, competency domain descriptions, and competency frameworks based on the scope of targeted faculty (either multiple health professions, single health professions, or specialties within a profession) would improve the designs of FD programs in HPE. Additionally, the use of Developmental components would provide a means of supporting the continued development of faculty throughout their academic careers. These findings also have research implications; especially when considering the comparison of competency domains and frameworks for specialties within healthcare professions other than medicine. Since only FD programs for medical specialties were identified via the search methods utilized in this scoping review, additional research would be warranted when additional literature is available.

CONCLUSIONS

This scoping review provided answers to our two research questions regarding the use of competency frameworks, EPAs, and use of learning theory for HPE FD programs. We concluded that few authors include an explicit recognized definition of FD or describe the use of a recognized learning theory when framing the developmental context and intended focus of their programs. Additionally, few authors design their FD programs to conform to pre-established competency frameworks. Instead, as evidence of the current eclectic nature of HPE FD design, this review found that the majority of authors either utilize recognized competency frameworks to inform a novel design of their own or develop a de novo competency framework designed to meet their intended HPE purpose.

CHAPTER 3: DISCUSSION

Societal & Scientific Relevance

This research provides important knowledge regarding the use of theoretical frameworks for faculty development programs in health professions education and synthesizes that knowledge into useful recommendations for future initiatives. Answers were offered to two research questions regarding the use of competency frameworks, EPAs, and use of learning theory for HPE FD programs, concluding that few authors include an explicit definition of FD or describe the use of a recognized learning theory when framing the developmental context and intended focus of their programs. For the frameworks analyzed in this research, differences were observed regarding the use of specific competency domains when viewed relative to the scope of targeted faculty and framework design structure that could be used to inform future FD programs. These findings support the need to align the needs of targeted faculty with specific underlying learning theories in order to provide a greater degree of intentional theoretical grounding designed to support individualized outcome requirements for specific faculty groups.

Indicative of the current eclectic nature of faculty development, this research also revealed that few authors design their FD programs to conform to pre-established competency frameworks. Instead, the majority of authors either utilize recognized competency frameworks to inform a novel design of their own or develop a de novo competency framework designed to meet their intended HPE purpose. Although commonalities were observed in the use of various competency domains for various faculty groups in the frameworks, differences were observed when frameworks were analyzed relative to scope of targeted faculty, being from multiple professions, individual professions, or specialties within individual professions. These differences support the conclusion that the use of *Synthetic* framework structures (utilizing EPAs or FTAs) may provide enhanced faculty-centricity when designing FD programs for healthcare specialists with more-specialized work practices.

Therefore, this research supports the use of more explicit definitions, competency domain descriptions, and competency frameworks based on the scope of targeted faculty (either multiple health professions, single health professions, or specialties within a profession) when designing FD programs in HPE. Additionally, the use of long-term *Developmental* components in framework design would provide a means of supporting the continued development of faculty throughout their academic careers.

Military Relevance

Dental educators serving in the US military represent an HPE group who would benefit from the establishment of a more faculty-centric developmental framework. Military dental educators comprise a professional discipline-specific group that would be well-suited for additional study and comparison to other health professional disciplines, as well as other sub-groups (including specific sub-specialties) within the dental profession. These educators are embedded within military units that accomplish operational mission requirements in support of their respective branch of service (Army, Navy, or Air Force) while simultaneously performing their specific academic missions. However, even with this unique teaching environment, additional research is required to determine if military dental educators share a common set of competency domains and specific competencies with other health professional disciplines. Additionally, if differences only exist in the specific activities that define their unique environment, their specific academic roles, and the degree of emphasis placed upon each competency area, then the establishment of an EPA-based FD framework could greatly enhance their teaching effectiveness.

This research provides valuable knowledge to inform decisions regarding the establishment of faculty development platforms targeted to the unique needs of military dental educators across all U.S. military Services. Specifically, it supports the collaborative goals of the Defense Health Agency and the primary focus area of the Military Health System to integrate and enhance:

1. Health care delivery,
2. Public health and medical education,

3. Private sector partnerships, and
4. Cutting edge medical research and development

Conclusion

This research provided answers to important questions regarding the current use of competency frameworks and competency-based frameworks such as EPAs for the design of HPE FD programs. The benefits of utilizing established learning theories and explicit definitions for included competencies in FD frameworks was highlighted, in order to best address the needs of specific faculty groups and provide more faculty-centric knowledge and skills development.

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