South African Dental Students' Perceptions of Most Important Nonclinical Skills According to Medical Leadership Competency Framework

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Abstract: Recent developmental frameworks suggest that dental curricula should focus on developing nonclinical skills in dental students. The aim of this study was to qualitatively map students' perceptions of the most important nonclinical skills against the Medical Leadership Competency Framework (MLCF). A representative sample of second- to fifth-year students (n=594; overall response rate 69%) from all four dental schools in South Africa participated in a cross-sectional survey in 2014-15 enquiring about nonclinical skills and dental practice management. One of the questions required students to list the four most important nonclinical skills required for a dentist. Students (n=541) most frequently noted competencies related to working with others (97.9%), personal qualities (72.3%), and managing services (42.9%) as the most important nonclinical skills. Very few students mentioned competencies related to the improvement of services (14.1%) and the provision of strategic direction (10.9%). The students' attention appeared to be on nonclinical skills generally required for clinical care with some realization of the importance of managing services, indicating a need for a stronger focus on leadership and management training in dental schools in South Africa. The results also helped to unravel some of the conceptual ambiguity of the MLCF and highlight opportunities for leadership research using the MLCF as a conceptual framework.

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Recently graduated dentists often enter the labor market with a requirement to engage in nonclinical activities such as managing the operations of sections of the oral health care system.[1] Moreover, dentists are continuously faced with a rapidly changing environment, requiring strategic thinking and adaptation to ensure sustainability of oral health care systems.[1,2] Based on these requirements, contemporary developmental frameworks suggest that institutions of higher learning should equip health care providers with a wide range of nonclinical skills such as self-awareness, self-management, professionalism, integrity, communication, collaboration, and management skills.[3,4] Research in this domain suggests that many of these skills form the basis of leadership competence in the context of health care service delivery.[3-6] Leadership skills are especially important to transform health care systems to quality entities that can serve the needs of broader society.[1,2,7-9] These viewpoints are supported by studies that show that dentists in practice indeed value leadership as an important skill.[10,11] Unfortunately, research in the domain of leadership is more often than not problematic.[12] Different people often interpret "leadership" differently. Concepts related to leadership are often ambiguous and complex, which poses problems to the educator to implement leadership development strategies.

A conceptual model to guide the development of leadership skills in the health professions is the Medical Leadership Competency Framework (MLCF).[3] The MLCF was developed by the National Health Service Institute for Innovation and Improvement, together with the Academy of Medical Royal

Colleges in the United Kingdom.[3] The validity of the MLCF has been corroborated by its conceptual similarity to other well-known frameworks such as the Canadian Medical Education Directives for Specialists framework that originated in the Royal College of Medicine in Canada.[3,4] The MLCF is divided into five competency domains: 1) demonstration of a variety of desirable and virtuous personal qualities such as self-awareness, self-management, continuing personal development, and integrity; 2) the ability to work with others including developing networks, building and maintaining relationships, encouragement of contribution, and teamwork; 3) the management of services through the planning of services and the management of resources, people, and performance; 4) the improvement of services by ensuring patient safety as well as through critical evaluation, encouragement of improvement and innovation, and facilitating transformation; and 5) the provision of strategic direction through the identification of contexts of change, the application of knowledge and evidence, and decision making.[3]

The MLCF has been criticized for its alleged conceptual ambiguity and generic oversimplification of ambiguous constructs such as competencies and leadership when applied to contexts such as national health insurance systems and private practice.[13] The requirement for the development of leadership skills, however, supersedes these conceptual weaknesses but indicates that existing frameworks such as the MLCF should be conceptually unravelled and progressively adapted to ensure conceptual rigor.

What makes the MLCF attractive to the educator is its design that supports the development of important nonclinical skills through phases of learning, with the focus being especially on the first four domains during the time of predoctoral study. The construction of a career is often a process that takes place in phases over a long period of time.[14-16] Choices of what should be learned over time are based on people's own conceptions of what they aspire to achieve in life, grounded in personal knowledge and life experience.[14-17]

In order for predoctoral dental curricula to be successful in teaching students the necessary nonclinical competencies, key players such as the students themselves will have to be convinced of the strategic importance of nonclinical skills.[18] The consultation of students in curriculum reform is of critical importance and has been found to be useful to inform curriculum change.[19] Students' perceptions of the relevance of course content and situational interest in subject content may have a distinct influence on learning.[20] A lack of intrinsic motivation may negatively impact the quality of learning.[19] It is therefore imperative to measure students' perceptions of the most important skills other than clinical skills in an early phase of career construction. The insights gained from this information could provide baseline information of the developmental focus of dental students when mapped against a framework such as the MLCF.[21] Such information could further point out gaps in the educational processes. This in turn may inform what effort and resources need to be committed to educating dental students about the importance of leadership and related nonclinical skills from early on in the curriculum or, alternatively, to consider different strategies to develop leadership in the profession. Moreover by mapping students' conceptions of the most important nonclinical skills against the MLCF, the information gained can help to unravel the conceptual ambiguity that may exist in the MLCF model, which may assist in the interpretation of future research. The aim of this study was therefore to investigate dental students' perceptions of the most important skills other than clinical skills during an early phase of career construction in relation to the MLCF.

Materials and Methods

Ethical clearance for the study was obtained from all four universities that participated: Sefako Makgatho University (SMU), University of Pretoria (UP), University of Witwatersrand (WITS), and University of Western Cape (UWC). In South Africa, dentistry is taught at these four universities. Nonclinical skills are generally taught in subjects such as ethics and jurisprudence and dental practice management. Relational communication skills also form part of this training. The participating dental schools provided the necessary approval for the survey to be conducted at their institutions.

An anonymous cross-sectional survey inquiring about issues related to dental practice management and nonclinical skills was administered to second- to fifth-year dental students in the second semester of 2014 at UWC, UP, and WITS and in the first semester of 2015 at SMU. The instrument had been piloted at the University of Pretoria in 2011.[22] Participants were asked to indicate their institution, year of study, and gender and whether dentistry was their first choice of study.

Since this study focused on students' perceptions of the most important nonclinical skills, the survey asked the following question: "Other than your clinical skills, name the four most important skills a dentist should possess to be successful." We used an open-ended question so as not to influence students' choices. The MLCF was chosen as the conceptual framework to guide the thematic analysis because of its connotation for leadership development that could apply in an undergraduate context.[3] The word "leadership" was intentionally excluded from the phrasing of the question because conceptions of leadership may vary considerably among students.

Student responses regarding the most important clinical skills were qualitatively coded and thematically reorganized according to the five domains of the MLCF (Figure 1), using the methods proposed by Braun and Clarke.[23] The thematic analysis was done by one of the researchers and controlled by two other researchers. Disagreements were resolved through debate and discussion followed by a process of recoding until consensus was reached.

During the thematic analysis, ambiguity was encountered, which resulted in an adaptation of the MLCF to clarify some of the ambiguities. For example, considerable overlaps between concepts were found within domains, but more importantly between domains. The MLCF was adapted to indicate these inter-domain overlaps. For example, we agreed that many of the "personal qualities" (Domain A) mentioned by the students strongly related to the "ability to build and maintain relationships" (a concept in Domain B), creating an interface between the two domains. Correspondingly, we found that "working with others" (Domain B) interfaced with "managing services" (Domain C) through the concept "managing people." Moreover, "improving services" (Domain D) and "providing strategic direction" (Domain E) were viewed as higher order leadership competencies that are normally functionalized during the management of services. Similar to another study that evaluated the MLCF, considerable overlap between the latter two domains was observed.[13] That study evaluated the MLCF in a private practice context, so themes such as "competitiveness" and "entrepreneurship" were placed in both the "improving services" and "providing strategic direction" domains. Therefore, in our study, these and similar concepts were also grouped under both the concepts "encouraging innovation" and "identifying contexts for change." This interpretation of the MLCF by the researchers informed the coding of the qualitative data.

During the initial analysis, we noted that many of the skills mentioned by students in the "working with others" and "managing services" domains were somewhat vague and referred to a broader level. For example, the students mentioned generic skills such as communication, interpersonal, and business skills that could apply to all the elements of those two domains. Because we decided that these skills belonged on a higher level, we created generic codes (codes B0 and C0) in each of these domains (Figure 1). The themes that emerged were subsequently descriptively tabulated as frequency distributions to indicate the students' focus in terms of nonclinical skills.

Results

A total of 594 students from the four dental schools responded to the survey. The response rates for SMU, UP, UWC, and WITS were 40%, 81%, 75%, and 79%, respectively. The overall response rate was 69%. The sample was representatively distributed in terms of year of study (Table 1). The majority of students were female (64.2%), and dentistry was the first choice of study for 67.6% of the students. Of the 594 students who completed the survey, 541 responded to the question on the most important clinical skills.

Table 1. Demographic characteristics of sample (N=594)

Characteristic		Number	Percentage of Total
University	SMU	78	13.1%
	UP	174	29.2%
	WITS	253	42.5%
	UWC	89	15.0%
Year of study	2	154	25.9%
	3	139	23.4%
	4	174	29.2%
	5	127	21.3%
Gender	Female	382	64.2%
	Male	211	35.5%
Dentistry as first choice of study	No	169	28.4%
	Yes	402	67.6%

SMU=Sefako Makgatho University, UP=University of Pretoria, WITS=University of Witwatersrand, UWC=University of Western Cape

Note: Percentages may not total 100% because of rounding. Some respondents skipped the questions about gender and dentistry as first choice of study.

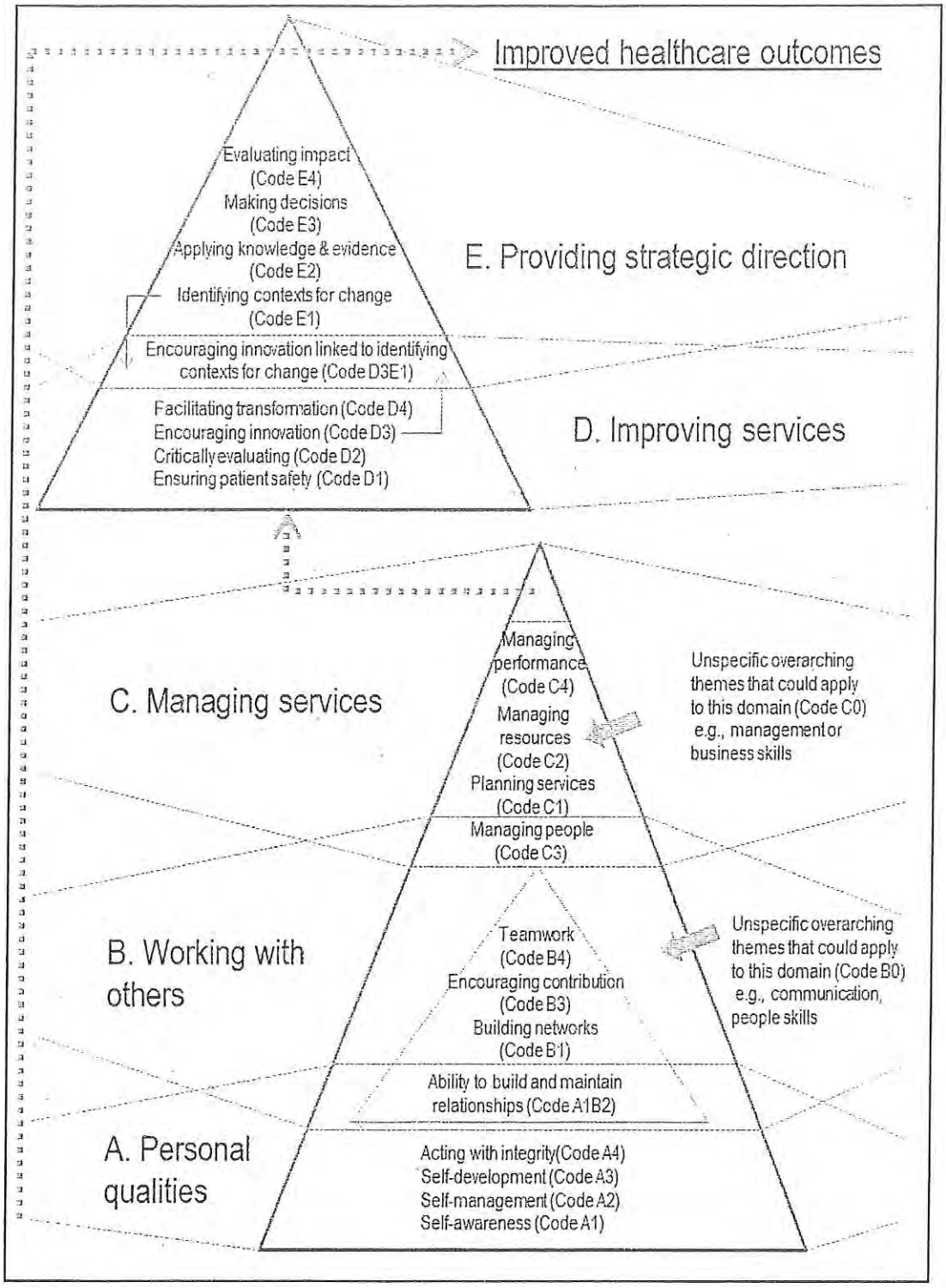

Figure 1. Authors' version of the MLCF and quantitative coding of MLCF domain competencies

Table 2 and Table 3 show the themes in the MLCF domains and their competency elements that we identified. The emerging themes of Domains B and C were generally on a higher level (codes B0 and C0). Only a minority of the original MLCF competencies that make up these two domains were specifically mentioned by the students.

Table 4 shows the percentage distribution of emerging themes of students' selection of the most important nonclinical skills in the context of the adapted MLCF. It is notable that, in students' responses, the skills category was dominated (in descending order) by emerging themes in Domain B (working with others) (91.9%), Domain A (personal qualities)

Table 2. Emerging themes in MLCF domain A: personal qualities

A1. Self-Awareness

Accountable	Efficient	Objective	Self-criticism
Accurate	Emotional intelligence	Open-minded	Self-discipline
Assertiveness	Endurance	Organized	Self-esteem
Attention to detail	Energetic	Passionate	Self-worth
Awareness of limitations	Enthusiastic	Patience	Sensible
Behavioral skills	Excellence	Perfectionist	Skilful
Calmness	Excited	Perseverance	Smart
Careful	Flexible	Persistence	Strength
Competence	Focus	Positive attitude	Talented
Confidence	Hardworking	Practical	Versatility
Courage	Independence	Precision	Vigilant
Dedication	Know what is expected	Pride	Will
Determination	Mental strength	Punctuality	Work ethic
Diligent	Meticulous	Quality work	
Discipline	Motivated	Reliable	
Effective	Neatness	Responsibility	

A2. Managing Yourself	A3. Continuing Personal Development		A4. Acting with Integrity
Ambition	Contemporary	Reading	Authentic
Balanced life	Desire to know more	Theoretical background	Ethical
Emotional stability	Eager to learn new things	Updated knowledge	Good reputation
Happiness	Have computer skills	Willingness to learn	Has a conscience
Have a goal in life	Inquisitive		Honesty
Hobby, sport, recreation	Intellectual		Integrity
Hygiene/cleanliness	Knowledgeable		Moral
Personal skills	Lifelong learning		Not money-centered
Religion	Multilingualism		Professionalism
Stress management skills	Need for business knowledge		Proper behavior
Well groomed	Need for legal knowledge		Strive for beneficence
			Trustworthy
			Truthfulness

A1B2. Self-Awareness Intersection with Building and Maintaining Relationships

Accommodating	Gentleness	Open	Sensitivity
Approachable	Good bedside manner	Outgoing	Sympathetic
Calming	Good mannerisms	Patient-centered	Tact
Caring	Good-willed	Peaceful	Think of others as equals
Comforting	Helpful	Personable	Tolerance
Compassionate	Humanity	Pleasant	Transparency
Considerate	Humble	Put patients first	Understanding
Displays trust	Humility	Reasonable	Unselfishness
Empathy	Justice	Reassuring	Welcoming
Equity	Kindness	Respect	Willing to give
Fair	Loyalty	Respectful	
Friendly/smile	Nonjudgmental	Selfless	

Table 3. Emerging themes in MLCF domains B through E

B. Working with Others

B0. General People Skills		B1. Developing Networks	B2. Encouraging Contribution	B3. Working in Teams
Advocate	Outreach	Associate with peers	Education	Coordination skills
Charismatic	Patient-dentist relationships	Interdisciplinary skills	Facilitation skills	Delegation skills
Communication	People skills	Negotiating	Role modelling	Teamwork
Conflict resolution	Personal soft skills	Participate in social events	Teaching skills	
Counselling skills	Personality			
Educate patients	Psychological skills			
Good with children	Psychosocial skills			
Interpersonal relations/ skills	Public speaking			
Involvement	Sense of humor			
Listening skills	Small talk ability			
Love to help people	Social skills			
Love working with people	Societal			
	To read people			

C. Managing Services

C0. General Management Skills	C1. Planning Services	C2. Managing Resources	C3. Managing People	C4. Managing Performance
Business management	Planning	Accounting	Advertising	Oversee practice
Business skills	Budgeting skills	Marketing skills	Patient management	
Management skills		Financial skills	Staff management	
Practice management skills		Record keeping		
Administrative		Time management		
Medical aid and billing system		Waste management		
Organizational skills				

D. Improving Services

D1. Ensuring Patient Safety	D2. Critically Evaluating		D3. Encouraging Improvement and Innovation	D3E1*
Emergency medicine management	Analytical	Logical skills	Business sense/ minded	Competitive
	Business wise	Money wise		Engineering mindset
	Clarification	Prioritizing		Entrepreneurship
	Cognitive skills	Problem-solving skills		Innovation skills
	Common sense	Quick thinker		Risk taker
	Creative thinking	Rational money spender		
	Critical thinking	Research		
	Economic	Thinker		
	Financially smart			
	Find solutions			

E. Providing Strategic Direction

E1. Identifying Contexts for Change		E2. Applying Knowledge and Evidence	E3. Making Decisions	
Being aware of changes	Opportunist	Ability to apply knowledge	Ability to deal with the unforeseen	Dealing with stressful situations
Environmental scanning	Vision		Ability to make quick decisions	Decision making skills
Foresight			Convincing ability	Think on your feet

*Code D3E1 identifies concepts that belong to both the D3 and E1 competencies.

Table 4. Descriptive tabulation of percentage distribution of domain categories themes based on the MLCF (n=541)

Code	Category	Number	Percentage
Domain A. Personal Qualities		391	72.3%
A1	Developing self-awareness	217	40.1%
A2	Managing yourself	33	6.1%
A3	Continuing personal development	73	13.5%
A4	Acting with integrity	121	22.4%
A1B2	Developing self-awareness intersecting with building and maintaining relationships	200	40.0%
Domain B. Working with Others (including A1B2 and C3)		497	91.9%
B0	General people skills	399	73.8%
B1	Developing networks	11	2.0%
B2	Encouraging contribution	5	0.9%
B3	Working in teams	8	1.5%
Domain C. Managing Services		232	42.9%
C0	General management skills	134	24.8%
C1	Planning of services	5	0.9%
C2	Managing resources	136	25.1%
C3	Managing people	15	2.8%
C4	Managing performance	1	0.2%
Domain D. Improving Services		76	14.1%
D1	Ensuring patient safety	5	0.9%
D2	Critically evaluating	46	8.5%
D3	Encouraging improvement and innovation	14	2.6%
D3E1	Intersection between D3 and E1	5	0.9%
D4	Encouraging transformation	0	–
Domain E. Providing Strategic Direction (including D3E1)		39	7.2%
E1	Identifying contexts for change	5	0.9%
E2	Applying knowledge and evidence	0	–
E3	Making decisions	20	3.7%
E4	Evaluating impact	0	–
Leadership	Leadership mentioned on its own as an important nonclinical skill	59	10.9%

Note: "Number" refers to number of respondents who mentioned at least one concept per code category. Domain totals were calculated independently from their subordinate code categories for the domains because students often reported more than one competency in a domain. Only one competency per respondent was taken into consideration on a domain level.

(72.3%), and Domain C (managing services) (42.9%). In total, 14.1% and 7.2% of the students, respectively, mentioned skills in Domains D and E, and 59 students (10.9%) mentioned the word "leadership" on its own as one of the important nonclinical skills.

Discussion

This study examined student perceptions of the most important skills other than clinical skills using the MLCF as a conceptual guide. These students regarded communication, interpersonal skills (general skills belonging to the "working with others" domain), and personal qualities as the most important nonclinical skills. These findings may be attributed to dental students' inherent focus on clinical care: dentistry is predominantly a clinical discipline, and predoctoral curricula are dominated by teaching and learning aimed at developing clinical skills with limited time spent on nonclinical skills such as practice management.[17] Moreover, students most likely enter dental school with the aim of obtaining the necessary clinical skills to be able to practice as a dentist when they qualify. It is therefore conceivable that predoctoral students, who are in an early phase of career construction,[14-17] may not always realize the importance of nonclinical skills that apply to the management of health care service delivery. Dental students, by default, practice relational communication skills in the context of patient care.[24] They also participate in teaching and learning focussed

on developing professionalism and ethical behavior,[25] which strongly relate to many of the personal qualities listed by the students as the most important nonclinical skills (Table 2). It can therefore be concluded that these students' perceptions of the most important nonclinical skills were likely based on their educational experience.

This study's findings also suggested that the students' focus was not necessarily on people skills required in a business environment. The reality may even be that students only realize the importance of many required nonclinical skills when they enter the labor market and are faced with leadership and management issues. It is notable that the majority of students in our study did not specify competencies such as teamwork, networking, encouraging contribution, and management of people—qualities found to be important by Nancarrow et al.[26]

Dental students in South Africa may from time to time be required to do group work, but the value of teamwork, networking, and encouraging contribution is rarely assessed and reflected upon. A need therefore exists to teach and assess teamwork from early in the curriculum. This could be done by introducing students to the theoretical basis of teamwork, giving them role-play exercises,[27] and assessing group work exercises in terms of team contribution and team dynamics across the curriculum to ensure repetition and continuous feedback. A need also exists to create exercises in which students are required to more frequently engage in formal networking activities related to their academic and clinical activities. Formalized interdisciplinary cooperation between dental and dental hygiene students as described by Nancarrow et al. could be used to address this need.[26]

Dental students are also not typically required to plan and manage health services, which may explain their lesser focus on the management of services. Practice management instruction is by and large didactic in nature in South Africa. Our finding that more than 40% of the students mentioned business skills as an important nonclinical skill, however, indicates some awareness of the need for competence in this domain.

Given the developmental phase of the students, it is not surprising that most students in our study did not mention many competencies in Domains D and E. These findings suggest that undergraduate curricula in South Africa are perhaps not able to focus a much larger contingent of students on these higher order skills up to Domain D ("improving services") as proposed by the MLCF.[3]

Our study's finding that the students' focus in nonclinical skills was more on Domains A to C and less on Domains D and E provided some evidence of the validity of the MLCF as a developmental framework. The reduced focus on managing services and the other two higher order domains suggests that students could be exposed a bit more to the requirement for these competencies. It could therefore be argued that undergraduate curricula could extent their efforts to spend more time on managing services, developing critical thinking, and developing strategic thinking in an authentic or simulated business context. The often-cited problems with curriculum overload[28] and the lack of time in undergraduate dental curricula[17,28] suggest that postgraduate study in dental practice management and leadership should be used to strengthen the development of these higher order nonclinical skills.[29] Postgraduate study in practice management should be marketed more widely, and dental students should be sensitized throughout the curriculum to engage in strategic thinking, not only about their own career prospects but also to analyze how their abilities complement the changing external environment.

If the dental profession's vision is high-quality treatment for all at affordable rates, then universities will have to invest much more time and effort to develop students' management and leadership skills at the undergraduate level, as well as to encourage graduates to engage in postgraduate study in this regard. Postgraduate courses in leadership at leading universities such as Harvard may serve as an example of the way forward.[29] Models such as MLCF and CanMEDS could be adopted more widely in postgraduate curricula, especially in the clinical specialization and public health disciplines.[3,4] Given the complexity of ensuring a viable dental practice in the current economic climate and the inability of some government services to provide high-quality dental care to the general population, it would not be farfetched to propose that private practice owners and chief dentists in government service should possess some kind of leadership or managerial qualification.[30,31] Such recommendations would be particularly relevant for developing countries like South Africa.

Issues pertaining to the conceptual ambiguity of the MLCF were raised in this article. It should be noted that the categorization of highly interrelated concepts was sometimes problematic. For example, it could be argued that there was quite a bit of overlap (Figure 1) among Domain A concepts such as self-awareness, self-development, self-management,

Domain A: Demonstrating desirable and virtuous personal qualities
- Developing self-awareness
  - My training developed my ability to be assertive
  - My training developed my ability to realize my limitations
- Managing yourself
  - My training developed my ability to lead a balanced life
  - My training developed my ability to manage stressful situations
- Continuing personal development
  - My training developed my desire to continuously learn new things
  - My training developed my desire to continuously stay updated on relevant knowledge
- Acting with integrity
  - My training improved my ability to always act in an ethically correct way
  - My training improved my ability to always be truthful

Domain B: Working with others
- Developing networks
  - My training developed my ability to associate with peers
  - My training developed my ability to negotiate
- Building and maintaining relationships
  - My training developed my ability to be approachable
  - My training developed my ability to be empathetic towards others
- Encouraging contribution
  - My training developed my ability to teach others
  - My training developed my ability to serve as a role model for others
- Working within teams
  - My training developed my ability to work in teams
  - My training developed my ability to delegate work to team members

Domain C: Managing services
- Planning of services
  - My training developed my ability to plan dental service delivery
  - My training developed my ability to compile a budget for service delivery
- Managing resources
  - My training developed my ability to manage time
  - My training developed my ability to manage finances
- Managing people
  - My training developed my ability to manage people
  - My training developed my ability to recruit and appoint personnel
- Managing performance
  - My training developed my ability to manage the performance of employees
  - My training developed my ability to manage the financial performance of a business

Domain D: Improving services
- Ensuring patient safety
  - My training developed my ability to ensure patient safety
- Critically evaluating
  - My training developed my reasoning ability from a business perspective
  - My training developed my ability to problem-solve
- Encouraging improvement and innovation
  - My training developed my ability to be business minded
  - My training developed my ability to be an entrepreneur
- Facilitating transformation
  - My training developed my ability to transform service delivery for the good

Domain E: Providing strategic direction
- Identifying the contexts for change
  - My training developed my vision of what health care service should be like in future
- Applying knowledge and evidence
  - My training developed my ability to apply knowledge from a business perspective
- Making decisions
  - My training developed my ability to make quality business decisions
- Evaluating impact
  - My training developed my ability to evaluate the impact of service delivery on society

Figure 2. Sample items for a leadership competency development index

integrity, and the ability to build and maintain relationships[32] (Table 2). We suggest that these emerging themes identified in our study be converted into a detailed questionnaire inquiring about the importance of individual skills or qualities in the context of dentistry as a profession. The resulting stakeholder responses could then be subjected to psychometric analyses such as principal component analyses to determine commonalities between similar constructs.[33] Such statistical testing may provide more clarity regarding whether highly interrelated concepts should be measured independently or be pooled together as single constructs in the MLCF. The same applies to the competencies in the other domains.

The interdomain overlaps (Figure 1) identified in this study show the interrelatedness of many of the generic competencies in the MLCF. It could be argued that the introduction of these overlaps into the MLCF reduces ambiguity in the interpretation of quantitative results. Certainly, personal qualities such as the ability to show empathy, sympathy, and selfless care form the basis of building and maintaining relationships, which in turn form the basis of teamwork and personnel management.[26] Although this may still be an oversimplification of how these concepts interact, it is a more sophisticated conceptual interpretation.

By asking students to reflect on the attainment of the wide variety of competencies (Table 2) on an ordinal scale, it is conceivable that a leadership competency development index (Figure 2) could be developed to measure the ability of curricula to develop nonclinical skills over time. The competency inventories created in this study (Tables 2 and 3) could be updated through further literature review and the consultation of higher level stakeholders such as qualified dentists and managers in service delivery. The current research methodology could also be followed to compare student perceptions at different universities regarding nonclinical skills in the context of leadership. Further research in this area is needed.

A limitation of this study is that its results can only be inferred by taking the cross-sectional study design into account. The results are also based on student opinion. Student opinions are deemed to have limitations but are considered to be an acceptable means of obtaining feedback with the aim of improving curricular interventions.[19] The strength of this study is its sample size and the inclusion of student opinions from all four dental schools in South Africa.

Conclusion

In this study, dental students engaged in early phase career construction rated personal qualities and interpersonal and communication skills as the most important nonclinical skills, with some realization of the importance of managing services. The matching of student perceptions of the most important nonclinical skills required by a dentist according to MLCF competencies provided some external validation for the MLCF. The qualitative analysis also helped to unravel some of the conceptual ambiguity of the model. This study provides a variety of ideas to pursue leadership research in the context of dental and medical education.

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