Presence of management, entrepreneurship, leadership and marketing topics in the dental school curriculum in Brazil

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Abstract

Introduction: To analyse the presence and characteristics of curricular components related to management, entrepreneurship, leadership and marketing as part of the structure and teaching methods of undergraduate courses in dentistry in Brazil.

Materials and Methods: This is an observational study that used the Ministry of Education's Undergraduate Course Accreditation Platform, which included 424 undergraduate courses in Dentistry on the last date of collection (August 31 2019). The following items were analysed as follows: the existence of curricular components in relation to the proposed themes, the most recurring denominations of curricular components, minimum and maximum workload, mandatory/optional classification, theoretical/practical teaching condition and in which year the curricular components were inserted.

Results: 367/424 (86.6%) of dentistry courses in Brazil included at least one of the topics: management, entrepreneurship, leadership and marketing curricular components in their curriculum, whilst 57/424 (13.4%) did not have these curricular components in their curricular structure. The most frequent names were "Management" 99 (45.21%) and "Entrepreneurship" 80 (36.5%). There was a predominance of the "theoretical method" and the number of hours varied considerably, with the most common course hours between 40 and 60 h. The majority of curricular components were inserted in the third to fifth year and offered on a compulsory basis.

Conclusion: Most curricular matrices of dentistry courses in Brazil had components related to the topics studied. However, due to the variety of curricular components' names, hours, periods of courses and different teaching methodologies, there is a need to redesign the

teaching and learning process, defining educational and evaluation models with common curricular components.

Keywords: communication and interpersonal skills, curriculum development, educational methodology, undergraduate dental education

1 INTRODUCTION

A dentist who is well prepared for practice would be academically and technically competent, and, in this context, communication skills, entrepreneurship, and leadership represent essential skills for success.[1] During economic and public health hardships, such expertise will help dental businesses to not only survive but to thrive.[2]

As the business of dentistry is changing, it is important that dental students become adept at more than making clinical diagnoses and providing treatments. Their skillsets should include a focus on building and maintaining the patient-doctor relationship,[3] dental office management,[4] leadership proficiencies[5, 6] and understanding the concepts of person-centred care.[7] Even though oversight bodies such as Commission on Dental Accreditation (CODA)[8] and National Curricular Guidelines of the Undergraduate Course in Dentistry of Brazil require the development of management and health team leadership skills.[9]

National Curriculum Guidelines suggest the inclusion of non-clinical skills including leadership and management, multi-professional teamwork, commitment, responsibility, empathy, ability to make decisions and verbal and non-verbal communication, skills. Additionally, guidance on the complex administration of the dental workforce, as well as the physical and material resources and information needed, will be important for new graduates to become successful entrepreneurs, managers, employers and leaders of their health team. Hence, compliance with National Curriculum Guidelines is essential for standardizing the quality of Dentistry courses in Brazil.[9]

It appears that many current dental curricula do not yet substantially include all or even parts of this content.[6, 10, 11] There are several US dental schools that provide a clear precedent for the inclusion of leadership and management-based course content that could be modelled in the Brazilian dental school system. Notably, US students have consistently reported positive attitudes regarding the relevance of the course material.[2, 12-15]

Dental courses in Brazil follow the National Curriculum Guidelines that provide guidance on the need for, amongst others, the inclusion of management, entrepreneurship and leadership skills and competences.[9] Given this reality, there is a clear need for Brazilian Universities to provide leadership and management content within the current dental curricula of its dental schools. However, to our knowledge, there are no studies in the scientific literature about the presence, and characteristics of management, entrepreneurship, leadership and marketing course content in Brazilian dental curricula. Therefore, the objective of this study was to investigate the presence and distribution of these themes within the dental curricula of the Brazilian Dental Universities. To this end, we provide a descriptive analysis of the most recurring course content, the minimum and maximum course hours, required/optional course qualification, and the approaches of theoretical/practical teaching.

2 METHODS

Type of study

This is a transversal and observational study exploring all undergraduate Dentistry courses in Brazil, providing an updated analysis of the presence or absence of specific management, entrepreneurship, leadership and marketing curricular components.

Inclusion criteria and sample size

Brazil is a country divided into five regions: (North, Northeast, Midwest, Southeast and South), has 26 states and a federal district. Until 31 August 2019, Brazilian dental colleges offered 501 courses throughout its regions and states.

All dental colleges with active undergraduate courses in Brazil were included in the study. For this study, we reviewed the Ministry of Education's Undergraduate Course Accreditation Platform (e-MEC), which included 501 undergraduate courses in Dentistry on the last date of data collection (August 31 2019). Colleges with suspended/inactive courses that did not show up in the e-MEC platform or did not have active webpages, courses that did not have their curricular components exposed on the websites, were excluded from the study. The e-MEC is a public domain, online platform provided by the Brazilian government and is used for the registration of all undergraduate courses in Brazil.[16] Of the 501 undergraduate courses in Dentistry, 424 contained websites that had curricular matrices that described their curricular components, this being the final sample. Figure 1 shows the distribution of courses, in the studied sample, in relation to Brazilian states and regions.

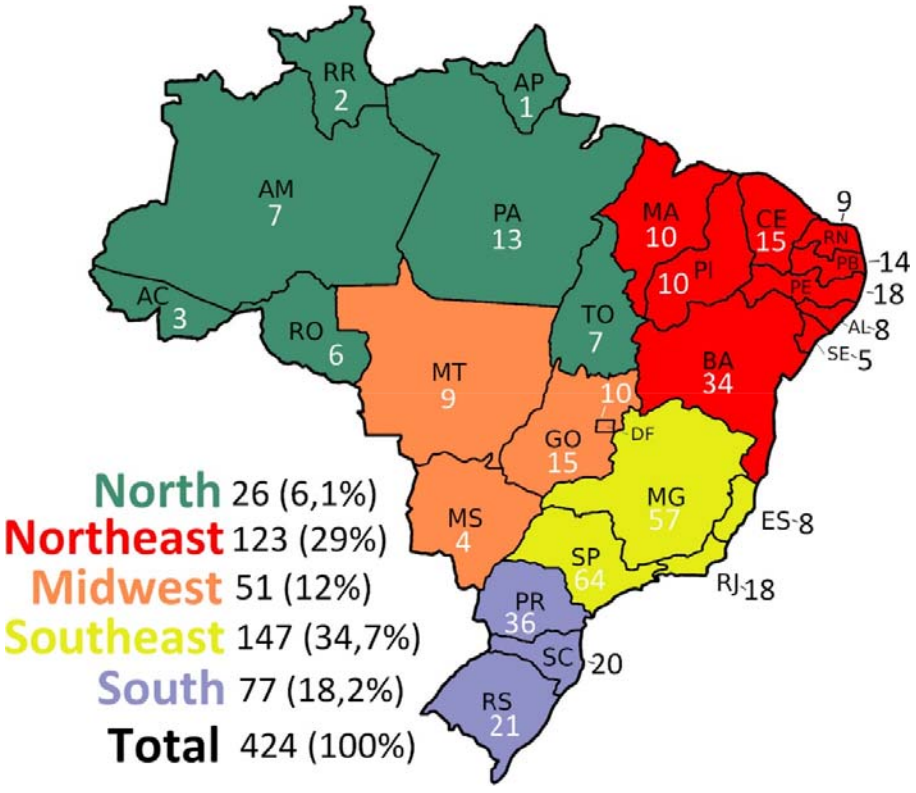

FIGURE 1. Dentistry courses in Brazil with localized curricular matrix, distributed according to the regions and states of the country (Total of 424 institutions)

Dental courses in Brazil have curricular matrices that are based on National Curriculum Guidelines.[9] These matrices, in turn, have curricular components that are for the formation of the dentist, offered during the undergraduate course in Dentistry. The current research emphasized the curricular components that were taught specifically: management, entrepreneurship, leadership and marketing. Table 1 shows the variables that were studied.

TABLE 1. Variables analysed in the present research

1 If curricular matrices were found on the e-Mec platform
2 If there was at least one curricular component related to the topics of leadership, entrepreneurship, management and/or marketing
3 Most recurrent denominations of curricular component
4 Minimum and maximum workload curricular component
5 Condition of the curricular component, if mandatory, optional or both
6 Classification of the curricular component, whether theoretical, theoretical-practical, practical or distance learning (distance education)
7 In which year was the curricular component was inserted

Data collection and analysis

In the first stage, a calibrated researcher carried out the research on the e-MEC platform. The number of Universities with a Dentistry course was verified on the e-MEC Platform website https://emec.mec.gov.br/. The filters used were "undergraduate courses," "Dentistry" and "active." The data collection generated an Excel spreadsheet with all courses, including universities that had more than one dentistry course in different locations in Brazil.

In the second stage, the universities were separated by states. Then, one by one, the courses were searched on their websites directly on the Google platform, always using the full name of the university, adding city and state, to avoid duplicate results. The presence of curricular components noted on the websites of the various dental courses were analysed using the filters "management" AND OR, "marketing" AND OR, "leadership" AND OR, "entrepreneurship."

The following contents were researched: existence of the university, location, existence of the dentistry course, existence of the curriculum matrix on the website, presence of the curricular component and its teaching methodology information contained. See Table 1. In this phase, it was verified whether there was more than one curricular component that covered the themes of management, entrepreneurship, leadership and marketing, in the same course and at the same university. If there were Dental courses with three curricular components in the topics of management, leadership and marketing components distributed in different years, the results for these Dental courses were separated into 1, 2 and 3. This whole process took 10 months.

The National Curriculum Guidelines provides total autonomy for universities to plan and consider all variables regarding their courses amongst some suggested possibilities. For teaching method, every course could be taught only theoretical, only practical, theoretical-practical or remotely. Different than the reality of other countries,[3, 17] there was no classification or definition made on the collected data, since the framework proposing the organization and the application of the courses already stablished by the government on the referred guideline.[9]

The data were computed and tabulated using SPSS Statistics 20.0 software. To perform the analysis of the data, the chi-square test was used to verify the association of variables according to their categories, with a significance level of 1%. See Tables 2 and 3.

TABLE 2. Information on the curriculum components: total hours, relevant themes, conditions and methodology of (CC) in the curriculum matrices of universities, Brazil—2019

Variables	Freq *n*	Valid perc *% valid*	χ^{2a} test, *p*-value
Total hours load			
5 |—20 h	5	1.59%	$\chi^2 = 169.59$, $p < .0001$**
20 |—40 h	57	18.10%	
40 |—60 h	70	22.22%	
60 |—80 h	52	16.51%	
80 |—100 h	40	12.70%	
100 |—120 h	7	2.22%	
120 |—140 h	19	6.03%	
140 |—160 h	7	2.22%	
160 h ou +	58	18.41%	
Valid total	315	100.00%	
Most recurrent themes			
Management	99	45.21%	$\chi^2 = 464.54$, $p < .0001$**
Entrepreneurship	80	36.53%	
Marketing	3	1.37%	
Management and entrepreneurship	15	6.85%	
Management and marketing	3	1.37%	
Entrepreneurship and marketing	18	8.22%	
Management, entrepreneurship and Marketing	1	0.46%	
Valid total	219	100.00%	
Condition of curricular component 1			
Mandatory	296	91.93%	$\chi^2 = 449.45$, $p < .0001$**
Optional	26	8.07%	
Valid total	322	100.00%	
Condition of curricular component 2			
Mandatory	129	84.31%	$\chi^2 = 141.39$, $p < .0001$**
Optional	24	15.69%	
Valid total	153	100.00%	
Condition of curricular component 3			
Mandatory	43	65.15%	$\chi^2 = 10.39$, $p < .0009$**
Optional	23	34.85%	
Valid total	66	100.00%	
Curricular component Methodology 1			
Theoretical	71	60.68%	$\chi^2 = 120.56$, $p < .0001$**
Theoretical-practical	20	17.09%	
Digital	25	21.37%	
Practical-Digital	1	0.85%	
Valid total	117	100.00%	
Curricular component Methodology 2			
Theoretical	24	55.81%	$\chi^2 = 23.51$, $p < .0001$**
Theoretical-practical	3	6.98%	
Digital	16	37.21%	
Valid total	43	100.00%	
Curricular component Methodology 3			
Theoretical	4	40.00%	$\chi^2 = 1.6$, $p = .6594$
Theoretical-practical	2	20.00%	
Digital	2	20.00%	
Practical-Digital	2	20.00%	
Valid Total	10	100.00%	

Note

Significance level adopted: α = 0.01 ou 1%.

Significant results: Significance (**) *p*-value < .01.

[a] Non-parametric Chi-Square association test.

TABLE 3. Year of applications of the three curriculum components in the dentistry course

	n	% valid	χ^{2a} test, *p*-value
Year of *curricular component* 1			
First year	67	20.81%	χ2 = 134.83, *p* < .0001**
Second year	35	10.87%	
Third year	33	10.25%	
Fourth year	81	25.16%	
Fifth year	78	24.22%	
Optional	26	8.07%	
First or second year	2	0.62%	
Valid total	322	100.00%	
Year of *curricular component* 2			
First year	6	3.92%	χ2 = 37.41, *p* < .0001**
Second year	11	7.19%	
Third year	34	22.22%	
Fourth year	34	22.22%	
Fifth year	26	16.99%	
Optional	24	15.69%	
First or second year	18	11.76%	
Valid total	153	100.00%	
Year of *curricular component* 3			
Third year	7	10.61%	χ2 = 24.16, *p* < .0001**
Fourth year	9	13.64%	
Fifth year	27	40.91%	
Optional	23	34.85%	
Valid total	66	100.00%	

Note

Significance level adopted: α = 0.01 ou 1%.

Significant results: Significance (**) *p*-value < .01.

[a] Non-parametric Chi-Square association test.

3 RESULTS

Distribution of courses in Brazil

Figure 1 shows dentistry courses in Brazil with localized curricular matrix, distributed according to the regions and states of the country, with a total of 424 dental courses.

Curricular components found on the e-MEC platform and sites

Of the 424 (100%) participating dental courses, 367/424 (86,6%) reported having some curricular component related to the themes, whilst 57/424 (13,4%) did not have the relevant themes in their curriculum (Table 2).

Most recurrent denominations of curricular components

As for the nomenclature of the curricular components of the theme explored, the most frequent terms were “Management,” 99 (45.21%); "Entrepreneurship," 80 (36.5%) times;

"Entrepreneurship and marketing," appearing 18 (8.22%) times. The other curricular components varied widely, including "leadership," "marketing" and "management and marketing"(Table 2).

Minimum and maximum workload

There was a large variation in relation to the total hours load variable, which ranged from 5 to 160 h or more; the largest number of dentistry courses, 70 (22.2%), had a total workload of between 40 and 60 out of a valid total of 315 institutions (Table 2).

Condition of the curricular components if mandatory, optional or both

Regarding the dichotomous variables conditions of the curricular components, (whether mandatory or optional), there was a predominance of the “mandatory” response for the three curricular components: prevailing for curricular components 1, 296 (91.9%) of institutions, out of a valid total of 322 institutions, followed by curricular components 2, 129 (84.3%) of institutions, out of a valid total of 153 institutions and, finally, prevailing for curricular components 3, 43 (65.2%) of institutions out of a valid total of 66 institutions (Table 2).

Classification of the methodologies

For the variables methodologies of the curricular components (1, 2 and 3), there was a predominance of the “theoretical” response for the three curricular courses: prevailing for curricular component 1, 71 (60.7%) of the curricular courses, out of a valid total of 117 curricular courses, followed by curricular component 2, 24 (55.8%) of the curricular courses, of a valid total of 43 curricular courses and, finally, prevailing for curricular component 3, 4 (40.0%) of the curricular courses, of a valid total of 10 curricular courses (Table 2).

Year of insertion of the curricular component

The majority of curricular components were inserted in the third to fifth year. There were courses with three curricular components in the topics of management, leadership and marketing distributed in different years and, therefore, the results for these courses were separated into 1, 2 and 3 (Table 3).

Analysis

The Chi-square association test applied to the variables on information on curricular components in the Dentistry Courses of the Universities of Brazil surveyed, showed statistically significant results for all the variables considered, providing significance *p*-value <.01 (level of significance adopted, except for the variable Discipline Methodology 3, which presented significance *p*-value =.6594 > α = 0.01, Tables 2 and 3).

4 DISCUSSION

In 1996, there were just 90 undergraduate dental colleges in Brazil. In 2009, this increased to 189 colleges, and, according to the e-MEC platform, there are currently 501 dentistry colleges across the country. The number of students is equally growing each year as is the number of fully licenced dentists. In January 2019, Brazil counted 550 904 active dentists.[16] With increasing competition, patients are likely to become more aware they have a choice of dental provider and might compare levels of service provided; hence dentists with salient leadership skills and knowledge of management and marketing strategies will be better positioned to achieve successful practice outcomes.[2, 18]

As of 2020, Brazil offers a staggering number of dental courses to its students (544), an increase from 303 courses since 2015. Clearly, Brazilian dental education has diligently continued to improve its scientific and technological development. However, it is now seeing results similarly to other countries where a large number of dentists have flooded the job market whilst demand for services may be less than supply.[19] Additionally in Brazil, graduates prefer to get settled in the southeast region, which is reflected in the asymmetrical predominance of courses in São Paulo and Minas Gerais, both located in the southeast region, the most wealthy in Brazil.[20] This of course increases access of care issues in other, less wealthy areas of the country, similar as is seen in the United States.[21-24]

Many dental students in Brazil, because of the labour market need, want to work in both the public and private sectors simultaneously.[25, 26] This ambiguity is likely driven by the desire to have both a public job as a guarantee of stability and a private sector job in order to reach higher salary levels.[25] Hence, in this context, the dental colleges in Brazil have the challenge to train dental professionals who will be successful both as public health dentists as well as private entrepreneurs.[27] Thus, Brazilian dental colleges should to provide their dental students with courses in management and leadership in order to prepare their students for the rigours and intricacies of team work, public health management challenges, financial and budgetary management tasks, and personnel management, to name a few. In the absence of courses on management and leadership, dentistry students are probably less prepared for the challenges of the labour market.[2]

The results of this study demonstrates the interest of dental schools in Brazil in including management and leadership courses in the dental curriculum. When to offer any type of such course content requires great thought. On the one hand, offering curricular leadership/management course content in early years may not allow for in depth understanding, as learners are focussed on understanding basic clinical and patient-centred materials. Offering such material in the later years, when there is already greater maturity and experience of the learner, may be more efficacious. However, in the later years, most learners are likely pre-occupied with trying to meet clinical demands and adding more non-clinical focussed topics remains challenging.

Besides when to offer the course work, the question remains how to best develop and teach the course material. This includes if the course should be mandatory or voluntary, how many hours of course work is considered meaningful, what should be the minimum content covered, what teaching methods are most effective and if course work can be somewhat standardized as a best practice; to name just a few touch points. Our results indicate that that there is no teaching standard for these subjects in Brazil. For now, there are no other studies in Brazilian literature to compare our results with.

Results of the present research showed that most dentistry institutions in Brazil teach course content in leadership, management and marketing in a theoretical way using a lecture format, as a mandatory course. However, management, marketing and leadership concepts lend themselves much better to be taught using a case-based teaching methodology or a flipped class room approach in which theoretical and practical applications, such as the development of self-assessments and pro-forma business plans are explored.[2] Hence, a curriculum that is limited to theoretical teaching alone omits important learning tools. Some examples of active teaching methodologies for management, leadership and marketing include: screen application,[28] case studies, team or group discussion, business plan creation, guest speaker, individual and group projects, problem-based learning, games and simulation of business ideas, role plays, seminars and visits to websites or companies.[29] Field work and internship will likely further expand the horizon of the learner.

A revolution is happening in the teaching of dentistry in the world. Many are successful examples of models of methodologies considered reflective and effective such as community-based dental education (CBDE), collaboration with colleagues and inverted classroom, Internet and digital technology such as Google Docs.[30-35] Clearly, the time has come to reconsider education in its wide diversity, both from an ontological and pedagogical point of view. This should also include consideration of the range of theoretical choices, objectives, target audience, pedagogical methods and institutional context being observed through the lens of multiple teaching models and learning processes.[36]

This study did not evaluate assessment methods; however, in the same way that teaching methods are increasingly being replaced by more active approaches,[37-39] traditional assessment methods are also gradually being replaced by more effective methods such as: objective structured clinical examinations (OSCEs), the Professionalism Mini-Assessment Exercise (P-MEX) and the Ten-Item Personality Inventory (TIPI) that measures five dimensions: extroversion, agreement, awareness, emotional stability and openness to Experiences.[40-42] In the future, additional research is necessary to study methods for evaluating the curricular components on management, leadership, entrepreneurship and marketing.

There are few reports on how to teach and evaluate active management and leadership methodologies in undergraduate dentistry courses in Brazil. The results of this project suggest that, in Brazil, the traditional teaching method still predominates. Similarly, in the United States and Canada, many dental schools still focus on educating students in the art and science of dentistry, and students are well prepared for the study of current science, disease and technology; however, many dental school curricula lack programmes specifically designed to help students learn how to navigate in a changing environment or successfully manage interpersonal relationships, communication and decision-making skills.[14]

The curriculum components on leadership management, entrepreneurship and marketing must follow the National Curriculum Guidelines for dental courses, as such allowing for the development of humanistic critical thinking, self-reflexing general practitioners, who can work at all levels of health care, with a patient-centred care focus. According to those guidelines, the curriculum components must use active teaching/learning methodologies and include skills such as leadership, multi-professional teamwork, responsibility, empathy, decision-making, communication, administration, entrepreneurship and management.[9] The presence of curricular components on management, entrepreneurship, leadership and marketing at most universities in Brazil, suggests that National Curriculum Guidelines are relevant. However, on the e-MEC platform there was no information on the level of compliance with National Curriculum Guidelines; the great variability of teaching methodologies, maximum and minimum load and different names of curricular components suggests that there is a clear need for standardization of these curricular components in Brazil.

The National Assessment of Student Performance (ENADE) is a national qualitative and quantitative assessment of Dental courses in Brazil that includes, amongst others, the assessment of the pedagogical and didactic organization of the course, based on on-site visits by peer reviewers. The courses are scored on a scale of 1 to 5, with 1 being unsatisfactory and 5 being very good.[20] Another study on compliance with the DCN showed that, in relation to the “Pedagogical Approach” dimension, there are still difficulties, such as the lack of pedagogical training for professors and course managers.[43]

Although Brazilian National Curricular Guidelines indicate the flexibility of the curricula of the Dentistry courses, it is possible for each educational institution to formulate its pedagogical approach to cover and adapt to the local social reality, respecting the peculiarities of each

place. However, there is a need to develop a minimum set of common skills and competences of leadership, management and marketing for our learners to be able to be measured by. In the United States, the American Dental Educational Association (ADEA) seeks to standardize content not only for undergraduate and graduate students but also for better preparation of dental academic leadership. Despite the fundamental differences in education, accreditation and licencing systems across the world, there is a global need to define "Preparation for practice" to facilitate the development of educational and evaluation models that produce health care providers capable of serving patients and communities.[3] In the same way that ADEA is responsible for the standardization of education in North America, ABENO—Brazilian association of dental education, could suggest a minimum standard of skills, competences and contents to be taught for courses in management, marketing and leadership as part of the dental curriculum in Brazil. ABENO is important in the creation and implementation of guidelines for the teaching of Dentistry in Brazil.[44]

The ADEA Leadership Institute develops faculty at academic dental institutions in preparation for leadership positions.[45] Some key competencies taught includes leadership, team building, personality preferences and leadership styles, peer evaluation, mentoring, emotional intelligence, stress management, work-life balance, organizational theory, leadership strategies, giving and receiving feedback, negotiation, strategic planning, budgeting and financial management, risk management, legal issues, job searches and interviews. Many of these skills should also be a part of the training of dentists around the world as they are or will become leaders in their universities, offices and communities.[45] The same way that ADEA is responsible for the standardization of education in North America,[3] ABENO could suggest a minimum standard of skills, competences and content considered to be taught as part of management, leadership and marketing courses in Brazilian dental schools.

There is a compelling need to redesign the teaching and learning processes for these course curriculum components by defining educational and evaluation models. ABENO, the Brazilian Association of Dental Education, could suggest a pattern of skills, competences and contents to be taught as part of the dental curriculum in Brazil.

One of the limitations of this research is the fact that content related to leadership, entrepreneurship and management could have been placed in other, unnamed curricular components.

The e-MEC website is an official platform of the government of Brazil that provides data for all undergraduate courses in activity in Brazil; however, on many occasions, both on the e-MEC platform and on the course websites, data from some dental courses were not available, omitting information on teaching conditions, name of the curricular component, minimum and maximum hours and other relevant data for analysis. Despite these limitations, the sample studied corresponded to almost the entire universe of dental courses in Brazil and as such contribute to the improvement of dental curricula in Brazil.

5 CONCLUSION

Leadership, entrepreneurship, management and marketing knowledge is fundamental for all dental school learners and dentists. The vast majority of dentistry courses in Brazil had, at least one of these components in their curricular matrices. There was a large variation of minimum and maximum content hours and denominations of curricular component for each dental college. The components were, for the most part, inserted in the third to fifth years. Most of these curricular components were offered mandatory; however, they were taught mainly theoretically, which is not the preferred teaching style for these types of courses.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest or sources of funding that could be perceived as prejudicial to the impartiality of the reported research.

AUTHOR CONTRIBUTION

Fábio Luiz Cunha D'Assunção planned the study, wrote the manuscript and the first draft of the article, edited additional drafts and the final version of the article. Elsbeth Kalenderian contributed revising the manuscript, adjustments to the English vocabulary and edited all versions of the article. Davi Clementino Carneiro contributed to the methodology, quantitative survey and actively participated in data collection, creation of database and review of bibliographic references. Maria Vitória Fragoso contributed to qualitatively analyzes, adjusting the database and collecting additional data. Jozemar Pereira dos Santos contributed to the statistical analysis. Alfa-Ibrahim-Yansane contributed to the review of the article, adjustments to the statistical analysis and to the final review of the article. Veronica Cabral dos Santos Cunha D'Assunção contributed to the design of study, reviewing articles on management in dentistry and for writing the article. Arturo Rodrigues Felinto contributed to obtain references on administration in dentistry and writing the article.

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