

Sports Dentistry in the curricula of undergraduate dental schools

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ABSTRACT

This study aimed to present an overview of the insertion of Sports Dentistry (SD) content in the pedagogical projects of dental schools in southeastern Brazil. Therefore, a document-based cross-sectional study was performed, analyzing the available curricula on the official websites of higher education institutions (HEIs) of southeastern Brazil registered in the e-MEC portal of the Ministry of Education. GraphPad Prism 8.1.2 statistical software was used to analyze the variables. The results of this study reflect the analysis of curricular components of 144 HEIs in southeastern Brazil. Only five (3.47%) institutions reported offering SD in their curricula. Public HEIs offered the subject more than private ones. The mean course load is 47.5 ± 8.66 hours. In conclusion, the SD approach is incipient in dental schools in southeastern Brazil, especially in private HEIs. Reformulations and updates in pedagogical projects, including topics to teach the principles of this field are required to raise interest and acknowledge this specialty in Brazil.

Descriptors: Dentistry. Sports. Teaching.

1 INTRODUCTION

Created in the 1980s¹ from the need to prevent orofacial injuries experienced in sports competitions², Sports Dentistry (SD) is one of the most recent fields in modern Dentistry. In Brazil, the Federal Council of Dentistry only acknowledged SD as a specialty in 2015. Section 4 of resolution CFO-160/2015³ established SD as a field of activity of dentists, aiming to investigate, prevent, treat, rehabilitate, and understand the influence of oral cavity diseases on the performance of professional and amateur athletes. This

resolution seeks the improvement of athletic performance and prevention of potential injuries considering the physiological particularities of athletes and sports modalities and rules.

Several studies illustrate the significance of dentists in the health team of athletes. A study performed in the London Olympics in 2012 showed that poor oral health seems related to lower performance and quality of life of Olympic athletes⁴. Other studies support that customized mouthguards reduce the incidence and severity of sports-related oral lesions^{1,5,6}.

Moreover, tooth losses, severe malocclusion, erosion from the indiscriminate use of isotonic drinks, mouth breathing, halitosis, and temporomandibular disorders, among others, negatively interfere with athlete performance⁷.

Although this field shows high potential for clinical care and research, SD was the dental specialty with the fewest registered professionals in Brazil five years after being acknowledged. In January 2020, only 28 professionals were registered as specialists in the Federal Council of Dentistry, corresponding to only 0.023% of the total number of dental specialists in the country⁸, and the reasons for this scenario have not been described.

Although the National Curricular Guidelines for dental schools in Brazil instruct that curricular components should be integrated with cross-sectional topics¹², having a subject focused on SD is an opportunity to promote this specialty among dental professionals and undergraduate students. Including a course subject in a curriculum does not necessarily mean quality teaching, so this study hypothesizes that the absence of a course subject dedicated to SD in undergraduate schools may contribute to low interest or even unawareness of this specialty by dental professionals and students. Therefore, this study aimed to evaluate the insertion of SD in Brazilian higher education institutions (HEIs).

2 METHOD

A document analysis was performed from the curricula of HEIs in southeastern Brazil registered in the e-MEC portal of the Ministry of Education. The southeastern region of Brazil was chosen because it has most dental schools in the country⁹; hence, it is the most representative. The e-MEC portal is regulated by Normative Act n. 21 from December 21,

2017¹⁰, which provides names, websites, and electronic addresses of HEIs with dental schools. These data allowed researchers to locate, in the HEI websites, the curricula of courses and verify the presence or absence of SD. When the curriculum was absent in the portal, an e-mail was sent to the course coordinators requesting the document. If there was no answer in two months, the institution was considered non-respondent.

The institutions excluded from the sample had not opened the course, did not have an official website and virtual media, showed uninitiated and/or extinct courses in the e-MEC portal, and did not answer the e-mail within the two-month deadline. The data were collected from February to June 2019. Considering the study used secondary data of public and unrestricted access, there was no need to submit it for ethical approval, according to instructions of the Brazilian Research Ethics Committee (CONEP).

The variables analyzed in this study were (I) the insertion and offer of the subject, (II) administrative category (public or private institution), (III) the nature of the curricular component (mandatory or optional), (IV) the form of content teaching (theoretical or practical-theoretical), (V) the school term the subject is offered, (VI) total course load (CL), and (VII) prerequisite subjects.

The data were tabulated and analyzed with GraphPad Prism 8.1.2 software (GraphPad Software Inc., La Jolla, CA, USA) and descriptive statistics.

3 RESULTS

Of the 176 registered HEIs in southeastern Brazilian states, 144 were included in the study, considering different campuses of the same institution (table 1). Thirty-two HEIs were excluded for not meeting

the inclusion criteria: one did not have an official website and virtual media, six showed uninitiated and/or extinct courses, and 25 did not respond to the e-mail after two months. Thirty-three HEIs had to be contacted by e-mail, and the response rate was 24.3%. According to the administrative category, Brazilian HEIs can be public or private. The final sample of this study included 125 (86.80%) private and 19 (13.19%) public HEIs.

As for the subject offer, SD was in 21.05% and 0.80% of the curricula of public and private HEIs, respectively (table 2). The only private institution offering SD includes the subject as optional and a semester course load of 40 hours. In turn, the course subject is mandatory in two (50%) of four public HEIs offering SD and optional in the other two (50%). Three public institutions provided the

course load, in which the subject is practical-theoretical, with a course load of 45 hours in two institutions and 60 hours in one (30 hours of theory and 30 hours of practice). Three HEIs informed that the subject methodology addresses theoretical and practical activities but did not specify whether the practice is clinical or in the laboratory (table 3). The mean course load of the subject is 47.5 ± 8.66 hours, and figure 1 shows the extent of distribution of this load.

In two HEIs, the prerequisite subjects for SD are "Anatomy Applied to Dentistry" and "Indirect Biomaterials". The prerequisites of another public institution are "Pharmacology", "Operative Restorative Dentistry", "Therapeutic Endodontics", "Therapeutic Periodontics", "Oral Surgery", and "Dental Materials".

Table 1. Total curricula analyzed per southeastern Brazilian states, 2019

State	Total n	Inclusion n - %	Public HEIs included	Private HEIs included
Espírito Santo (ES)	12	10 (83,3)	1	9
Minas Gerais (MG)	61	51 (83,6)	7	44
Rio de Janeiro (RJ)	28	21 (75,0)	4	17
São Paulo (SP)	75	62 (82,6)	7	55
Total	176	144 (81,8)	19	125

Table 2. The offer of Sports Dentistry in dental schools of public and private HEIs per southeastern Brazilian states, 2019 (n=144)

Course offer	n				
	ES	MG	RJ	SP	Total
<i>Public institutions</i>					
Present	0	0	2	2	4
Absent	1	7	2	5	15
<i>Private institutions</i>					
Present	0	1	0	0	1
Absent	9	43	17	55	124

Tree of the five institutions informed the school of presenting SD in the second-to-last or last term the subject is offered, showing a tendency of semesters (table 3).

Table 3. Characteristics of Sports Dentistry in dental schools in southeastern Brazil, 2019

HEIs	ADMINISTRATIVE CATEGORY	NATURE	METHODOLOGY	SCHOOL TERM		CL
				Total of school terms	School term offering the subject	
1	Private	Optional	-	-	-	40 hours
2	Public	Mandatory	Practical-theoretical	12	12 th	45 hours
3	Public	Mandatory	Practical-theoretical	10	9 th	45 hours
4	Public	Optional	Practical-theoretical	8	7 th	60 hours
5	Public	Optional	-	-	-	-

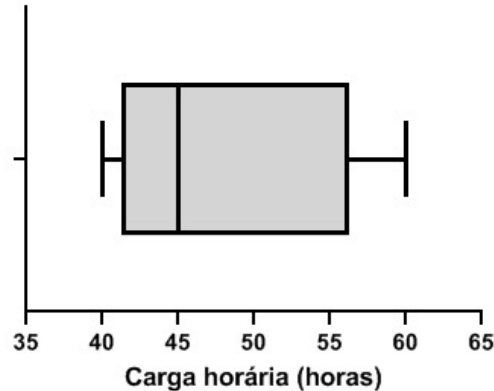


Figure 1. Course load of Sports Dentistry in dental schools in southeastern Brazil, 2019

4 DISCUSSION

Although Sports Dentistry (SD) is a promising field of Dentistry¹¹, this study found an incipient existence of subjects teaching this topic in dental schools, showing that the curricula of HEIs are not updated for SD teaching even five years after the Federal Council of Dentistry acknowledged it as a

specialty³. The National Curricular Guidelines of Dentistry in Brazil were reformulated and approved by the National Council of Education in 2018 and later published in the Official Federal Gazette¹². They determined that trained dental professionals must have a generalist, humanist, critical, and thoughtful education that allows working at all health care

levels. However, Law n. 9.394¹³, which establishes national education guidelines and foundations, ensures didactic and scientific autonomy to HEIs in defining their course curricula, as they may choose to offer specific subjects such as SD or not.

Compared to other dental specialties acknowledged by the Federal Council of Dentistry¹⁴, the existence of this subject in a specific course to discuss specialty topics is still lower than others. For instance, course subjects of Temporomandibular Disorders and Orofacial Pain are in 36% of HEIs in southeastern Brazil¹⁵, Stomatology¹⁶ and Implantology¹⁷ in 61.1%, Dentistry for Special Needs Patients in 62.5%¹⁸, and Forensic Dentistry in 79.1%¹⁹. Even Oral and Maxillofacial Prosthesis is inserted uniquely in the curricula of dental schools, with a presence in 5.5% of HEIs, which is higher than the offer of SD subjects²⁰.

Sports Dentistry is not restricted to treating dental injuries from sports practice²¹. It also regards the prevention and treatment of orofacial injuries, oral diseases associated with sports, and the maintenance of athlete performance to ensure better results^{2,11,21}. Dental injuries are the most common orofacial lesions experienced in sports practice¹¹. Among orofacial traumas during sports are tooth luxation and avulsion, tooth and facial bone fracture, concussion, temporomandibular joint luxation, and soft tissue laceration, among others, which makes prevention essential²¹⁻²⁵. Comparatively, many athletes are unaware of the health implications of a traumatic injury in the mouth or the potential for severe injuries in the head and neck region in a game¹¹. In this sense, dentists stand out as information multipliers, raising awareness among athletes, coaches, and patients on the relevance of preventing orofacial injuries in sports.

Using basic protection devices such as helmets and face- and/or mouthguards is the most significant aspect of preventing sports-related orofacial injuries¹¹. Among these mechanisms, mouthguards have proposed to reduce damages^{5,6}, possibly representing the most significant piece of oral/facial protection equipment, which dentists are responsible for producing¹¹. A systematic review and meta-analysis⁵ showed that groups of athletes who did not use mouthguards were twice more likely to experience orofacial injuries than those who did.

Despite this relevance, studies assessing dental student knowledge about mouthguards obtained unsatisfactory results^{26,27}, which may relate to the low presence of this curricular component in dental schools, as indicated in our results. Nascimento *et al.* (2019)²⁶ evaluated students of a public HEI in northeastern Brazil and found that dental students cannot identify the types of mouthguards, although most of them are aware of the device. Sizo *et al.* (2009)²⁷ analyzed undergraduate students of two HEIs in northern Brazil (one public and one private) and found that 28% and 30% of participants, respectively, knew at least one of the existing mouthguards. Moreover, when questioned about how they learned about mouthguards, the first answer of most students was not the undergraduate course, and the media was described as the primary source of information on the topic^{26,27}. To aggravate this scenario, the same study²⁷ found that the knowledge channel least mentioned by dental students of public and private HEIs were undergraduate courses. These findings show low student knowledge of SD, possibly due to the lack of approach to this content. Another relevant fact is that 98% of students consider SD an essential topic to be addressed in the course²⁶.

Accordingly, Brazilian and foreign studies evaluating SD knowledge and practice of athletes of different sports modalities showed low awareness and perception of the significance of using mouthguards^{28,29} and low use of these devices during sports practice^{28,30-32}. The unpreparedness of general clinicians due to the non-existent approach to the topic during their education and the low number of SD specialists in Brazil may contribute to similar findings. Without truly prepared dental professionals in the country, athletes will hardly be aware of orofacial trauma prevention.

Although sports have stood out over the last decade in Brazil, with the World Cup and the Olympics in 2014 and 2016, respectively, SD was not emphasized in the curricula of undergraduate courses, even after the creation of the Brazilian Academy of Sports Dentistry in 2012^{7,33}. Although public institutions offer the subject more than private ones, HEIs with dental schools in southeastern Brazil remain lagged in their curricular restructuring for including SD. There are very few SD specialists in Brazil, and finding those with teaching or teacher training skills in the field may be one of the obstacles for HEIs to offer the subject in their curricula.

A curricular reformulation in pedagogical projects of Dentistry must be encouraged to include SD in Brazilian undergraduate courses. Other studies also show the need for reformulating dental curricula considering new market demands³⁴⁻³⁶. In this context, assessing the current scenario of higher education curricula is vital to instigating changes that value excellent teaching and are guided, among other aspects, by labor market needs¹⁹. An immediate alternative is for universities to develop extracurricular projects dedicated to the topic, such as University

Extensions and Academic Leagues. Thus, through lectures, symposiums, mini-courses, and hands-on, among other events focused on SD, HEIs may encourage students to follow this specialty.

It is worth noting that the absence of a subject focused on SD topics does not mean it is not taught in HEIs. The content may be addressed in other course subjects or extracurricular activities, representing a limitation of this study. Further research may use methodologies based on a structured questionnaire sent to course coordinators and/or HEI representatives to collect complementary data not included in this study. Another limitation is the heterogeneity of the curricula analyzed, which hindered analyzing components such as the teaching method and course load of all HEIs offering the subject. A recent study by our research group has verified this heterogeneity by evaluating the enforcement of Law n. 13.168 of October 6, 2015. This legislation establishes that HEIs must provide the curriculum and faculty of higher education courses on their official institutional websites³⁷.

5 CONCLUSION

The SD approach is incipient and discrete in dental schools in Southeastern Brazil, especially in private HEIs. Curricular pedagogical projects must be updated to include subjects and topics focused on SD teaching.

RESUMO

Odontologia do Esporte nas matrizes curriculares dos cursos de graduação em Odontologia

O objetivo deste estudo é apresentar um panorama da inserção de conteúdos sobre Odontologia do Esporte (OE) nos projetos pedagógicos dos cursos de Odontologia na Região Sudeste do Brasil. Para isso, foi realizado

um estudo transversal de base documental, no qual foram analisadas as matrizes curriculares disponibilizadas nos sítios *web* oficiais das Instituições de Ensino Superior (IES) localizadas no sudeste brasileiro, cadastradas no portal e-MEC do Ministério da Educação. O *software* estatístico GraphPad Prism 8.1.2 foi utilizado na análise das variáveis. Os resultados desta pesquisa refletem a análise dos componentes curriculares de 144 IES localizadas no sudeste do Brasil. Destas, apenas cinco (3,47%) informaram ofertar em suas matrizes curriculares a disciplina de OE. IES públicas ofertam mais a disciplina que IES privadas. A carga horária média da disciplina é de 47,5±8,66 horas. Em conclusão, a abordagem da OE é incipiente nos cursos de Odontologia do sudeste brasileiro, especialmente nas IES privadas. Reformulações e atualizações dos projetos pedagógicos para a inclusão de tópicos destinados ao ensino dos princípios da área são necessárias, a fim de despertar o interesse e o reconhecimento da especialidade no Brasil.

Descritores: Odontologia. Esportes. Ensino.

REFERÊNCIAS

- Ranalli DN. Sports dentistry and dental traumatology. *Dent Traumatol.* 2002;18:231-6.
- Roettger M, Mills S. Introduction to Sports Dentistry. In: Roettger M. (eds) *Modern Sports Dentistry. Textbooks in Contemporary Dentistry.* Springer, Cham. 2018.
- Conselho Federal de Odontologia. Resolução CFO-160/2015. Reconhece a Acupuntura, a Homeopatia e a Odontologia do Esporte como especialidades odontológicas. *Diário Oficial da União* 06 nov 2015. [internet]. [Cited Feb. 01, 2020]. Available from: <http://www.normaslegais.com.br/legislacao/Resolucao-cfo-160-2015.htm>.
- Needleman I, Ashley P, Petrie A, Fortune F, Turner W, Jones J, et al. Oral health and impact on performance of athletes participating in the London 2012 Olympic Games: a cross-sectional study. *Br J Sports Med.* 2013;47(16):1054-8.
- Knapik JJ, Hoedebecke BL, Rogers GG, Sharp MA, Marshall SW. Effectiveness of Mouthguards for the Prevention of Orofacial Injuries and Concussions in Sports: Systematic Review and Meta-Analysis. *Sports Med.* 2019 Aug;49(8):1217-32.
- Knapik JJ, Marshall SW, Lee RB, Darakjy SS, Jones SB, Mitchener TA, et al. Mouthguards in sport activities: history, physical properties and injury prevention effectiveness. *Sports Med.* 2007;37(2):117-44.
- Assis C. Os rumos da odontologia do esporte no Brasil. *Rev Bras Odontol.* 2013;70(2):160-4.
- Conselho Federal de Odontologia – CFO [internet]. Quantidade Geral de Cirurgiões-Dentistas Especialistas. [Cited Feb. 01, 2020]. Available from: <http://cfo.org.br/website/estatisticas/quantidade-geral-de-cirurgioes-dentistas-especialistas/>.
- Martin ASS, Chisini LA, Martelli S, Sartori LRM, Ramos EC, Demarco FF. Distribuição dos cursos de Odontologia e de cirurgiões-dentistas no Brasil: uma visão do mercado de trabalho. *Rev ABENO.* 2018;18(1):63-73.
- Brasil. Ministério da Educação. Portaria Normativa nº 21, de 21 de dezembro de 2017. *Diário Oficial da União, Brasília, DF,* 22 dez 2017. n. 245, p. 29. [internet]. [Cited Feb. 01, 2020]. Available from: http://www.in.gov.br/materia/-/asset_publisher/Kujrw0TZC2Mb/content/id/1284644/do1-2017-12-22-portaria-n-21-de-21-de-dezembro-de-2017-1284640-1284640.
- Saini R. Sports dentistry. *Natl J Maxillofac Surg.* 2011 Jul;2(2):129-31.
- Brasil. Ministério da Educação. Conselho

- Nacional de Educação. Câmara de Educação Superior. Diretrizes Curriculares Nacionais do Curso de Graduação em Odontologia. Diário Oficial da União 17 jun 2021. Brasília: DF; 2021 [Cited June 23, 2021]. Available from: http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=127951-pces803-18-1&category_slug=outubro-2019&Itemid=30192.
13. Brasil. Lei nº9.394, de 20 de dezembro de 1996. Estabelece às diretrizes e bases da educação nacional. Brasília: Diário Oficial da União; Seção I:27834-27841. [Cited June 23, 2021]. Available from: http://www.planalto.gov.br/ccivil_03/leis/19394.htm.
 14. Conselho Federal de Odontologia. Resolução CFO-161/2015. Altera artigos, incisos e parágrafos da Resolução CFO 63/2005. Diário Oficial da União 06 nov 2015; Seção I:59. [Cited June 23, 2021]. Available from: <https://website.cfo.org.br/wp-content/uploads/2015/11/Resolu%C3%A7%C3%A3o-CFO-161-15-nova-especialidade-II.pdf>.
 15. Faria LV, Medeiros YL, Lopes DF, Durso BC. DTM e dor orofacial: perspectivas curriculares das faculdades de Odontologia do Sudeste brasileiro. *Hu Rev.* 2020; 46:1-7.
 16. Medeiros YL, Silva PVR, Lopes DF, Faria LV, Guimarães LDA. Oferta da disciplina de Estomatologia nos cursos de Odontologia do sudeste brasileiro. *RFO UPF.* 2020;25(1):26-31.
 17. Faria LV, Oliveira GA, Grázia MEP, Medeiros YL, Lopes DF, Leite ICG. O ensino de implantodontia nas graduações brasileiras de odontologia: um estudo transversal. *Rev Eletrônica Acervo Saúde.* 2020; 12(4):e2672.
 18. Lopes DF, Medeiros YL, Faria LV, Senra MRP. Odontologia para pacientes com necessidades especiais: como é a oferta dessa disciplina nas faculdades de odontologia do sudeste brasileiro? *Arq Odontol.* 2021; 57:149-57.
 19. Faria LV, Pinheiro FA, Lopes DF, Medeiros YL, Silva RHA. Ensino da Odontologia Legal nos cursos de graduação em Odontologia: um estudo transversal da região sudeste brasileira. *Rev Bras Odontol Leg RBOL.* 2021;8(1):13-22.
 20. Medeiros YL, Faria LV, Lopes DF, Vilela EM. Prótese Bucomaxilofacial na educação superior em Odontologia: perspectivas curriculares. *Rev Cir Traumatol Buco-Maxilo-Fac.* 2020; 20(4):6-11.
 21. Ramagoni NK, Singamaneni VK, Rao SR, Karthikeyan J. Sports dentistry: A review. *J Int Soc Prev Community Dent.* 2014 Dec;4(Suppl 3):S139-46.
 22. Young EJ, Macias CR, Stephens L. Common dental injury management in athletes. *Sports health.* 2015; 7(3):250-5.
 23. Souza BC, Fernandes LL, Barreto DM, Springer CR. Prevalence of orofacial trauma in soccer players of a Brazilian club. *Journal of Health Sciences.* 2019;9(3):168-72.
 24. de Souza BC. Lesões orofaciais em atletas. *Braz J Surg Clin Res.* Sep-Nov 2017;20(1):143-6.
 25. Dhillon BS, Sood N, Sood N, Sah N, Arora D, Mahendra A. Guarding the precious smile: incidence and prevention of injury in sports: a review. *J Int Oral Health.* 2014;6(4):104-7.
 26. Nascimento PML, Sobral-Souza DF, Lins Filho PC, Ribeiro RAO, Teixeira HM, Nascimento AB. Os alunos da Odontologia e Educação Física conhecem a importância do uso de protetores bucais na prática desportiva? *RGO.* 2019;67: e20190038.
 27. Sizo SR, Silva ES, Rocha MPC, Klautau EB.

- Avaliação do conhecimento em odontologia e educação física acerca dos protetores bucais. *Rev Bras Med Esporte*. 2009 Ago;15(4):282-6.
28. de Lima LF, Mohn Neto CR. Atenção ao trauma bucal: cotidiano e percepções de atletas do futebol. *ROBRAC*. 2015; 24(69):54-6.
29. Ferreira M, Martins F, Reis JA, Pereira J, Forjaz A, Barreto MJ, et al. Sports dentistry awareness in a population of young basketball players: a pilot study. *Ann Med*. 2019;51(sup1):136.
30. Cavalcanti AL, dos Santos FG, Peixoto LR, Gonzaga AKG, Dias CHS, Xavier AFC. Ocorrência de injúrias orofaciais em praticantes de esportes de luta. *Pesqui Bras Odontopediatria Clin Integr*. 2012;12(2):223-228.
31. Tiryaki M, Saygi G, Yildiz SO, Yildirim Z, Erdemir U, Yucel T. Prevalence of dental injuries and awareness regarding mouthguards among basketball players and coaches. *J Sports Med Phys Fitness*. 2017 Nov;57(11):1541-47
32. Yeşil Duymuş Z, Gungor H. Use of mouthguard rates among university athletes during sport activities in Erzurum, Turkey. *Dent Traumatol*. 2009 Jun;25(3):318-22.
33. Bonotto D. Odontologia do Esporte no Brasil. *Arch Oral Res*. 2013 May/Aug.;9(2)131-2.
34. Faria LV, Medeiros YL, Lopes DF, Vilela EM, Assis NMSP. Medical emergencies teaching in dentistry undergraduate courses in southeastern Brazil. *Braz J Oral Sci*. 2020;19:e209247.
35. Medeiros YL, Faria LV, Lopes DF, Oliveira IS, Fabri GMC. Inserção da Odontologia Hospitalar na grade curricular dos cursos de Odontologia do sudeste brasileiro. *Rev Fac Odontol Porto Alegre*. 2020; 61(1):87-93.
36. Medeiros YL, Lopes DF, Faria LV, Soares MRPS, Silvério CCP. Ensino da Língua Brasileira de Sinais nos cursos de graduação em Odontologia do Sudeste brasileiro: um estudo transversal. *Rev ABENO*. 2020; 20(1):113-20.
37. Faria LV, Medeiros Y de L, Fernandes Lopes D, de Oliveira Loures A, Cristina da Silva Rodrigues G, de Oliveira M. O cumprimento da Lei nº 13.168 de 6 de outubro de 2015 por cursos de Odontologia do Sul e Sudeste do Brasil: uma análise dos sítios eletrônicos institucionais. *Rev ABENO*. 2022; 22(2):1736.

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