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QUANTIFYING THE SCIENTIFIC STUDIES IN FORENSIC DENTISTRY PRESENTED AT MEETINGS OF THE “SOCIEDADE BRASILEIRA DE PESQUISA ODONTOLÓGICA” (SBPqO) BETWEEN 2013 AND 2018.

Quantificação dos estudos científicos em Odontologia Legal apresentados no Congresso da SBPqO entre 2013 e 2018.

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ABSTRACT

Currently, Brazil hosts one of the biggest communities of Forensic Dentists worldwide. In practice, Forensic Dentistry may be performed within official forensic services and through ad hoc consultancy. Hence, Training and education with high-level scientific evidence is a must. This study aimed to quantify the scientific studies presented at meeting of the “Sociedade Brasileira de Pesquisa Odontológica” (SBPqO). The sample consisted of the annals of the 30th, 31st, 32nd, 33rd, 34th and 35th scientific meetings of the SBPqO published between 2013 and 2018. The annals were retrieved from the website of SBPqO (www.sbpqo.org.br) and were revisited by two examiners. A search string of keywords was used to detect eligible abstracts initially related to Forensic Dentistry. Titles and abstracts of the scientific studies initially detected were read and filtered for data extraction. Year of publication, university in which the study was carried out and field within Forensic Dentistry were recorded. In total, 199 abstract related to Forensic Dentistry were detected. Sequentially, 29, 28, 49, 38, 29, 26 abstract were published in 2013, 2014, 2015, 2016, 2017 and 2018, respectively. Forty-three institutions were detected in the search, most of them were public (n=29; 67.44%) – these universities were responsible for most of the abstracts (n=176, 88.44%). Anthropological studies were the most prevalent (n=69; 34.67%), especially those exclusively related to age estimation (n=35; 50.72%). Between 2013 and 2018, abstracts in Forensic Dentistry represented only 1.11% of the studies in Dentistry. The scenario depicted from the most recent annals of the SBPqO shows that the scientific literature in Forensic Dentistry produced by Brazilian institutions remains scarce. Efforts should be made to encourage and trigger more investigations in the field.

KEYWORDS

Forensic dentistry; Research; Science.

INTRODUCTION

According to the Brazilian Federal Council of Dentistry, there are 318.162 active Dentists in the country, out of which

116.238 are registered as specialists¹.

Seven-hundred and forty-three Forensic Dentists represent 0.6% of the specialists¹.

For many professionals, Forensic Dentistry

figures as an alternative to the clinical practice, as an option to those who seek for unusual knowledge or as a mysterious field to those guided by curiosity. However, while in one hand the number of enthusiasts increases, in the other hand the workload dedicated to Forensic Dentistry at university level gradually decreases. In certain institutions, Forensic Dentistry is neglected to the point of being optional or even absent in the curriculum². Clearly, the missing piece of the puzzle is understanding that Forensic Dentistry is a horizontal discipline that communicates with every single field in Dentistry, from basic to clinical sciences³. Specifically in the latter, knowledge in the interface of forensics and clinics enable (bio)ethical performances within the professional limits³.

Scarce undergraduate teaching leads to scarce research and extension. Hence, being a forensic researcher is challenging task for Brazilian Dentists. This phenomenon is mainly justified by the fact that research requires supervision, and supervision is only optimal if highly-qualified. In this context, hiring trained professionals is a cornerstone to guide and motivate students, to establish research lines and to promote evidence-based practices with forensic background. Few institutions in Brazil manage to build up a solid academic curriculum that properly includes Forensic Dentistry². Their research reflects the incentive to deep learning the many branches of Forensic Dentistry. In practice, research manifests importance and contributions not only to guide clinical practices, but also to improve public security services³.

Assessing the scientific productivity of Forensic Dentistry in Brazil is necessary to expose the current scenario faced by researchers and to trigger more studies in the field. Despite important, this is a complex procedure, especially because research may be published through several channels and media. The annals of the scientific meetings of the “*Sociedade Brasileira de Pesquisa Odontológica*” (SBPqO) emerge as a prominent source of data to be revisited due to the high number of academic presentations registered every year. Currently, the SBPqO represents the Brazilian branch of the International Association of Dental Research (IADR)⁴, which abstracts are published as supplemental material in Brazilian Oral Research (BOR). For these reasons, presenting at SBPqO is a must in many Brazilian institutions.

This study aimed to revisit the annals of SBPqO published between 2013 and 2018 and to quantify the academic productivity related to Forensic Dentistry in Brazil.

MATERIAL AND METHODS

This was an observational study with retrospective data collection. Ethical clearance was not applicable considering the resolution #530 of the Brazilian National Council of Health of April 7th 2016 (investigation of databases of public domain).

The sample consisted of abstracts published in the annals of the 30th, 31st, 32nd, 33rd, 34th and 35th scientific meetings of SBPqO yearly available as supplemental material in BOR between 2013 and 2018.

The search for performed in the website of SBPqO (www.sbpqo.org.br). The following keywords were used to retrieve the maximum number of abstracts related to Forensic Dentistry: “Odontologia Legal; Forense; Legal; Justiça; Perícia; Ética; Identificação Humana; Estimativa de Idade; Antropologia; Desastres em Massa; Balística; Arma de Fogo”. Boolean operators AND and OR were used to combine the keywords.

Two independent examiners performed the data collection. A third examiner was included to solve inter-examiner disagreements. The extracted data included: I) the year of publication of the abstract; II) the number of abstracts related to Forensic Dentistry published every year; III) the percentage of studies in Forensic dentistry compared to the total amount of abstracts published every year; IV) the university that conducted the study, V) the region in Brazil in which the university is established; VI) the type of university (public or private); VII) the study field within Forensic Dentistry; and VIII) the specific field within anthropological studies. Data was descriptively analyzed.

RESULTS

In 2013, 2014, 2015, 2016, 2017 and 2018 the abstracts (n=199) published in the annals of the 30th, 31st, 32nd, 33rd, 34th and 35th scientific meetings of SBPqO were 29, 28, 49, 38, 29, 26, respectively. The mean number of abstracts between 2013 and 2018 was 33.16 ±8.79. Sequentially, along the six years, abstracts in Forensic Dentistry represented 1.08%, 1.05%, 1.6%, 1.16%, 0.94%, and 0.85% (mean: 1.11%

±0.26) of the total number of abstracts, respectively (Figure 1).

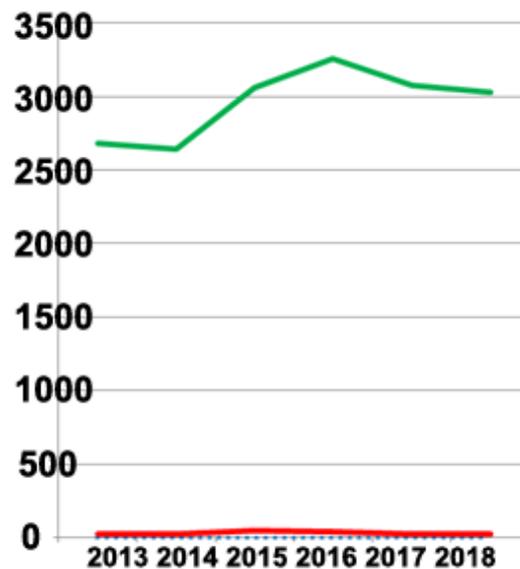


Figure 1 – Distribution of total abstracts (green line) and abstracts in Forensic Dentistry published from 2013 to 2018.

The abstracts were published by 43 Brazilian institutions (e.g. universities, faculties, education centers). Most of the institutions were established in the Northeast (n=13, 30.23%) and Southeast (n=13, 30.23%) regions, followed by South (n=11, 25.58%), Central-West (n=4, 9.30%) and North (n=2, 4.66%) regions. Sixty-five (32.66%) abstracts were published by institutions in the Northeast region, eighty-nine (44.72%) were published by the Southeast region, twenty-one (10.55%) by the South region, eighteen (9.04%) by the Central-West region and six (3.03%) by the North region. The mean number of abstracts per institution in each region was 5, 6.84, 1.9, 4.5 and 3 for the Northeast, Southeast, South, Central-West and North regions, respectively (Figure 2).

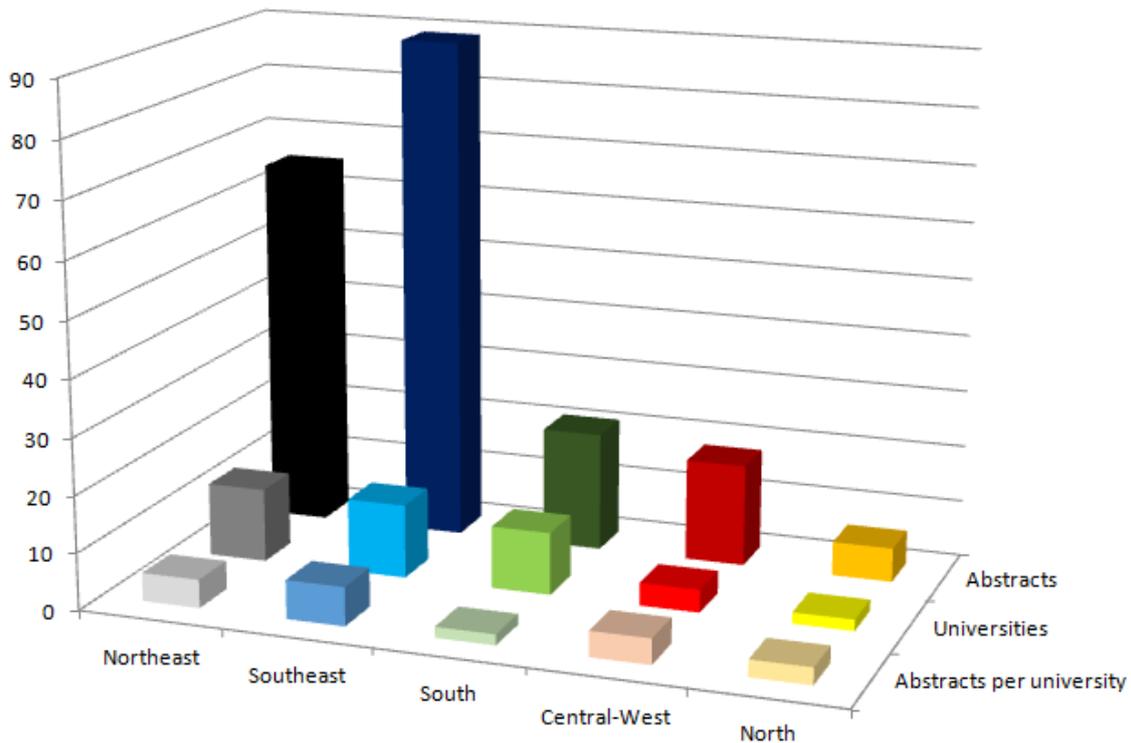


Figure 2 – Abstracts published by universities of the five regions of Brazil.

Twenty-nine (67.44%) universities were public, while fourteen (32.56%) were private. The public universities were responsible for 176 (88.44%) studies, while the private universities produced 23 (11.56%) studies (Figure 3). The top5 universities that published more abstracts in Forensic Dentistry were “*Universidade de São Paulo*” (n=43, 21.60%), “*Universidade Estadual de Campinas*” (n=20, 10.05%), “*Universidade Estadual da Paraíba*” (n=14, 7.03%), “*Universidade Federal de Goiás*” (n=13, 6.53%), e “*Universidade Federal da Paraíba*” (n=12, 6.03%) (Figure 4).

Most of the studies in Forensic Dentistry were related to the field of anthropology (n=69, 34.67%). The abstracts classified into this field investigated age estimation (n=35, 50.72%), sexual dimorphism (n=25,

36.24%), ancestry (n=4, 5.79%) and stature (n=1, 1.45%).

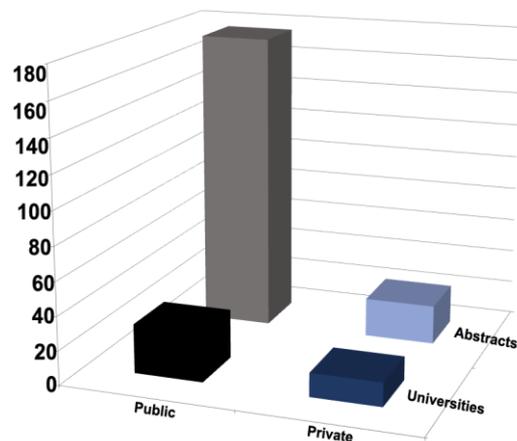


Figure 3 – Distribution of abstracts within public and private universities.

Some studies investigated more than one anthropological feature, such as sex and ancestry (n=2, 2.89%) and sex, age and ancestry (n=2, 2.89%). Other studies in dentistry were related to human identification (n=13, 6.53%) (by means of

comparative dentomaxillofacial evidences), cheiloscopy and/or rugoscopy (n=13, 6.53%), bitemark analysis (n=2, 1%), violence (n=28, 14.07%) (including studies in the prevalence, identification and quantification of dentomaxillofacial injuries), ethics and bioethics (n=8, 4.02%), forensic facial analysis (n=10, 5.02%) (related to forensic facial reconstruction or not), academic knowledge of students and professors (n=8, 4.02%), Civil Law (n=11, 5.52%), dental documents (n=5, 2.51%) and others (n=32, 16.11%) - Figure 5.

A deeper analysis into the productivity of the top5 universities ranked in this study showed that most of the abstracts published by USP (n=19, 44.18%), UNICAMP (n=10, 50%) and UFPB (n=8, 66.66%) were related to the field of anthropology, while in UEPB studies focused more in the investigation of

violence and its inherent injuries and sequelae (n=10, 71.42%). Studies carried out in UFG were more homogeneously distributed into the different field of Forensic Dentistry (Figure 6).

Nine abstracts (4.52%) out of 199 were awarded with official prizes or honorable distinctions between 2013 and 2018. In 2013, 2016, 2017 and 2018 awards were given to four abstracts in Forensic Dentistry (one per year). In 2014 and 2015, two and three abstracts were awarded, respectively. UEPB was awarded four times – all studies in the field of violence; USP was awarded three times – with studies in the fields of civil law, anthropology and others; and UFPB was awarded twice – with studies in the fields of cheiloscopy/rugoscopy and others (fields established by didactic reasons in the present study).

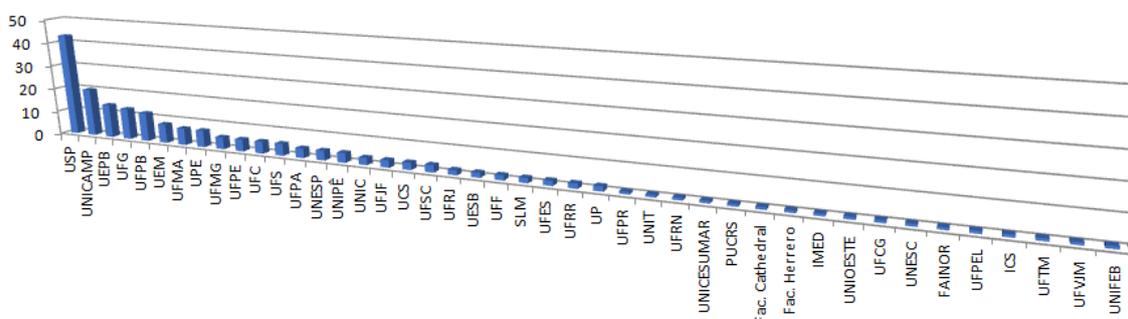


Figure 4 – Distribution of abstracts into the different universities detected in this study. Institutional acronyms stand for: “Universidade de São Paulo” (USP), “Universidade Estadual de Campinas” (UNICAMP), “Universidade Estadual da Paraíba” (UEPB), “Universidade Federal de Goiás” (UFG), “Universidade Federal da Paraíba” (UFPB), “Universidade Estadual de Maringá” (UEM), “Universidade Federal do Maranhão” (UFMA), “Universidade de Pernambuco” (UPE), “Universidade Federal de Minas Gerais” (UFMG), “Universidade Federal de Pernambuco” (UFPE), “Universidade Federal do Ceará” (UFC), “Universidade Federal do Sergipe” (UFS), “Universidade Federal do Pará” (UFPA), “Universidade do Estadual Paulista” (UNESP), “Centro Universitário de João Pessoa” (UNIPÊ), “Universidade de Cuiabá” (UNIC), “Universidade Federal de Juiz de Fora” (UFJF), “Universidade Cruzeiro do Sul” (UCS), “Universidade Federal de Santa Catarina” (UFSC), “Universidade Federal do Rio de Janeiro” (UFRJ), “Universidade Estadual do Sudoeste da Bahia” (UESB), “Universidade Federal Fluminense” (UFF), “Faculdade São Leopoldo Mandic” (SLM), “Universidade Federal do Espírito Santo” (UFES), “Universidade Federal de Roraima” (UFRR), “Universidade Positivo” (UP), “Universidade Federal do Paraná” (UFPR), “Universidade Tiradentes” (UNIT), “Universidade Federal do Rio Grande do Norte” (UFRN), “Centro Universitário de Maringá” (UNICESUMAR), “Pontifícia Universidade Católica do Rio Grande do Sul” (PUCRS), “Instituto Meridional” (IMED), “Universidade Estadual do Oeste do Paraná” (UNIOESTE), “Universidade Federal de Campina Grande” (UFCG), “Universidade Estadual de Santa Catarina” (UNESC), “Faculdade Independente do Nordeste” (FAINOR), “Universidade Federal de Pelotas” (UFPEL), “Instituto de Ciências da Saúde” (ICS), “Universidade Federal do Triângulo Mineiro” (UFTM), “Universidade Federal dos Vales do Jequitinhonha e Mucuri” (UFVJM), “Centro Universitário da Fundação Educacional de Barretos” (UNIFEB).

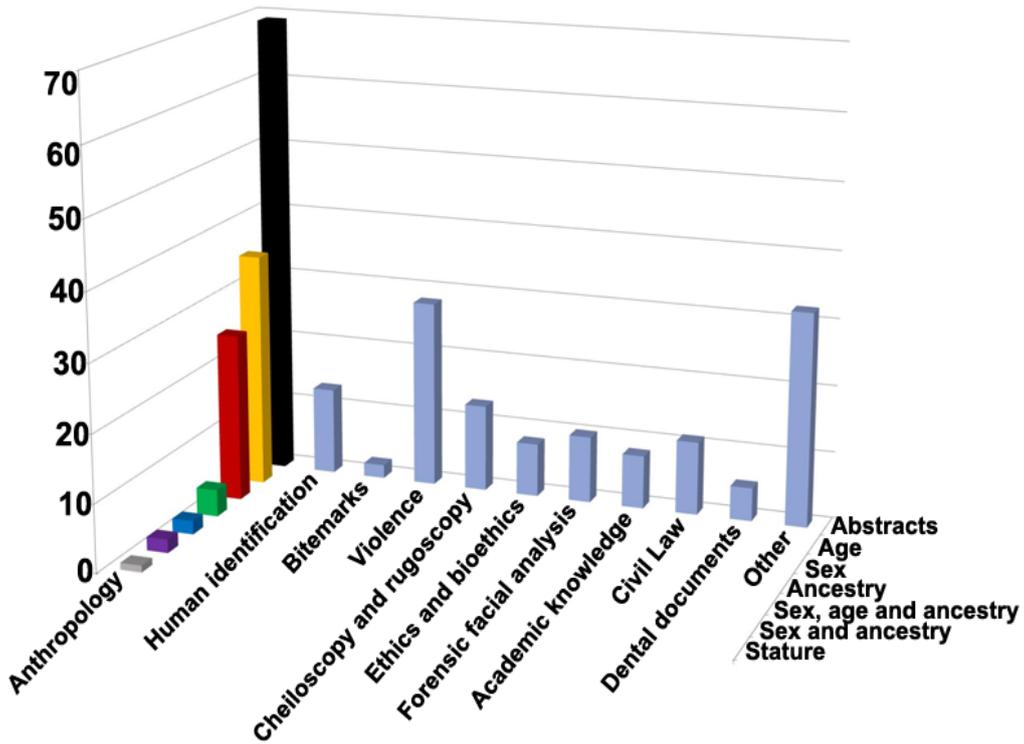


Figure 5 – Distribution of the research topics of the analyzed abstracts.

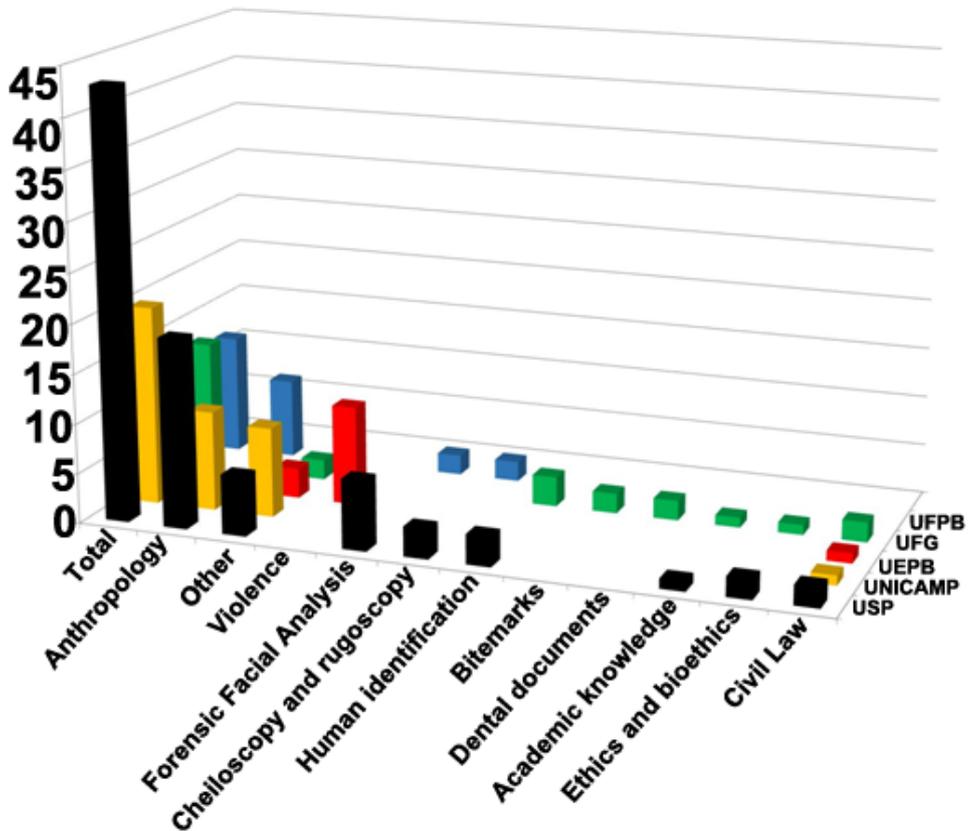


Figure 6 – Distribution of the research topics of the analyzed abstracts into the top 5 universities ranked by scientific productivity in this study.

DISCUSSION

In any field of science, productivity is founded on knowledge sedimentation. Along with the backbone of knowledge there are inherent academic pillars that rely on teaching, research and extension. From the point of view of science, research has a noble position reflecting the technological innovation, range and maturity of academic institutions. The educational cycle that surrounds productivity in the academy depends on the motivation of students to pursuing a research career, the available facilities and devices to enable professional growth, the presence of highly-trained tutors in the field, the development of workgroups, the establishment of solid research lines and the published material that reaches the community and contributes to the improvement of social services, such as health and security. Clearly, being productive is not an easy task without institutional, intellectual and financial support⁵. Underestimated by many, Forensic Dentistry suffers the difficulties of scientific productivity in an exponential scale. This study aimed to revisit the annals of the scientific meetings of SBPqO in order to quantify the abstracts published from studies in Forensic Dentistry. The rationale behind this study was raising the flag for major institutional attention and awareness regarding the potential of forensic research in Dentistry and the need for more incentive to development in the field.

The annals of the SBPqO were selected as the channel of communication to be sampled because they currently figure as one of the largest national data sources of research abstracts. Between 2013 and

2018, more than 17 thousand abstracts were published in the annals of the SBPqO. Forensic Dentistry studies (n=199) accounted for 1.11% of these abstracts. In practice, the low prevalence rate of forensic studies expresses firstly the large amount of clinical and basic research in the Brazilian Dentistry. Additionally, it also expresses the difficulties that universities have to support studies in the field. The difficulties may be justified by many reasons as previously debated, such as lack of trained professors, lack of facilities, lack of funding/resources⁵ and, more rarely, lack of motivated students.

The Southeast and Northeast regions of Brazil figured as the most productive. Related to the former, this phenomenon may be explained by the traditional and consolidated research centers in Forensic Dentistry established in the state of São Paulo, especially in USP, UNICAMP and UNESP. With academic training offered at undergraduation, specialization, master and doctoral levels, these centers host a large part of the enthusiasts that come from all over the country seeking for education. Similarly, the research centers in the Northeast have a large community of students and strong academic teams supervised by Official Forensic Experts. It is important to note that Northeastern State governments demonstrate awareness of the importance of Forensic Dentists in Official forensic teams. Naturally, the number of Official experts in the field is higher in the Northeast compared to the other regions of Brazil⁶. Forensic experts that are versatile for working both in Official services and in

the university successfully bridge a gap between practice and academy.

The top14 institutions (out of 43) ranked higher based on productivity were public. More evident discrepancies between the scientific productivity of public and private institutions are observed with the quantified evidence that shows that 88.44% of the abstracts were originally from the public sector. This outcome was, in part, expected because of the contemporary panorama of scientific research in Brazil – in which the public universities figure in leading positions⁷. The States of São Paulo, Paraíba and Goiás had the top5 universities in productivity. Together, these universities represented more than half of the scientific productivity in the country (51.75%) in face of the remaining 38 universities.

A close look at the scientific productivity showed that anthropology emerged as the most research field in Forensic Dentistry – especially when it comes to the investigation of age and sex. Studies in the scope of violence also presented a high prevalence of abstracts. However, it must be noted that “violence” was a conceptual group established for didactic purposes in this study as a pathway for clustering studies in the prevalence, characterization and quantification of firearm wounds and injuries by accidents. As expected, this group was large itself. Interestingly, the next step within this study was assessing potential research lines within the top5 universities ranked based on productivity. USP, UNICAMP and UFPB clearly showed a predilection for anthropological studies, while UEFB showed a strong research line

dedicated to studies related to violence and maxillofacial injuries. UFG revealed a versatile and balanced distribution of abstracts within seven research topics, with slightly stronger predilection for comparative human identification studies. These outcomes indicate that Forensic Dentistry in Brazil has a good communication with other forensic sciences, especially medicine, because anthropological studies often require an interdisciplinary approach. In Brazil there are no undergraduation course exclusively structured in Forensic Anthropology. The prevalence of studies in violence fits properly to the current scenario in Brazil, which is one of the countries with higher rates of violence worldwide⁸⁻¹⁰.

Studies in violence are so pertinent in Brazil that four of them were awarded during the scientific meetings of the SBPqO. This finding is even more expressive considering that all the studies were conducted at UEPB. Other five awards were given to USP (n=3) and UFPB (n=2). These results approach the ending point of this study by showing that despite scarce, the Brazilian productivity in Forensic Dentistry if qualified and eventually recognized and awarded in large-size scientific meetings, such as SBPqO. Incentive to research, technology and science in Forensic Dentistry is urgent need to prospectively promote and guarantee relevant contributions to the society.

CONCLUSION

The abstracts of studies in Forensic Dentistry published between 2013 and 2018 in the annals of the scientific meetings of SBPqO were scarce. However, the scientific awards obtained throughout

the years pointed towards a good research quality.

Institutional support is necessary to improve the scientific productivity in Forensic Dentistry. In practice, the support may be translated into properly trained tutors, adequate facilities and research funding.

RESUMO

Atualmente, o Brasil abriga uma das maiores comunidades de Odontologistas em nível mundial. Na prática, a Odontologia Legal pode ser exercida, principalmente, em serviços de perícia oficial ou mediante consultoria ad hoc. Assim sendo, treinamento e educação com elevado padrão de evidência científica na área são fundamentais. Este estudo teve por objetivo a quantificação dos trabalhos científicos apresentados nos encontros anuais da Sociedade Brasileira de Pesquisa Odontológica (SBPqO). A amostra consistiu dos anais do 30º, 31º, 32º, 33º, 34º e 35º encontros científicos da SBPqO publicados entre 2013 e 2018. Os anais foram coletados do endereço eletrônico da SBPqO (www.sbpqo.org.br) e foram avaliados por dois examinadores. Uma trama de palavras-chave foi desenvolvida para viabilizar a detecção de resumos elegíveis inicialmente relacionados com a Odontologia Legal. Títulos e resumos foram detectados e lidos para a extração de dados. O ano de publicação, a universidade na qual o estudo foi conduzido e a subárea abordada da Odontologia Legal foram registrados. Sequencialmente, 29, 28, 49, 38, 29 e 26 resumos foram publicados anualmente de 2013 a 2018, respectivamente. Quarenta e três instituições de ensino foram detectadas, em sua maioria públicas (n=29, 67,44%) – estas universidades foram responsáveis pela maioria dos resumos (n=176, 88,44%). Estudos em Antropologia foram os mais prevalentes (n=69, 34,67%), especialmente aqueles que trataram exclusivamente do tema estimativa de idade (n=35, 50,72%). Entre 2013 e 2018 os resumos em Odontologia Legal representaram apenas 1.11% de todos os trabalhos apresentados nos eventos da SBPqO. O cenário apresentado com base nos mais recentes anais dos encontros científicos da SBPqO denota a evidente escassez de estudos em Odontologia Legal. Esforços devem ser encorajados para a promoção de mais estudos nesta área.

PALAVRAS-CHAVE

Odontologia legal; Pesquisa; Ciência.

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