Is there a fragmentation in the oral and maxillofacial surgery research? A scientometric brief analysis of specialty’s journals.

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Abstract: Aim: To evaluate, using the Scopus database, the input and output citation pattern in the year 2015 for documents published in the five main oral and maxillofacial (OMS) journals. Methods: All document types published over the 2013–2015 period by the five main OMS journals: BJOMS, JOMS, IJOMS, JCMFS and JCFS were included. Citation and referencing data were extracted from the advanced search of Scopus. Results: A total of 2303 documents were published by the journals in 2015, and 3253 documents published in 2015 cited documents published by the journals in 2013 and 2014. Self-citation was 13.19% for the five journals as a whole, and 1024 (31.49%) documents cited journals from within the group. A total of 36,972 references were included in documents published in 2015 in the journals. Self-referencing was 6.56% for all journals as a group, and 7524 (20.35%) documents were from the group itself. From the top-20 referenced and citing journals, the presence of plastic and reconstructive surgery, and head and neck (otolaryngology) surgery journals is clear. This pattern was not the same across all the journals under study. Conclusion: There appears to be a “medical versus dental” fragmentation of research in the specialty, over a fragmentation by regions or countries.

Keywords: Oral and maxillofacial surgeons; research; education; bibliometrics.

INTRODUCTION.

The history of oral and maxillofacial surgery dates back to the nineteenth century and to the first surgical interventions relating to the oral cavity and face. However, further developments occurred during the First World War. The war conflict forced the collaboration of physicians and dentists to treat wounds of the maxillofacial area.1,2 Therefore, it is not surprising that the first maxillofacial surgeons had be trained with a double degree, becoming physicians and dentists.2,4 Also, it is not surprising that plastic surgery and head and neck surgery developed simultaneously into maxillofacial surgery. Many of the pioneering plastic surgeons were dentists and the first plastic surgery association included oral surgeons.4

The dual origin of maxillofacial surgery determined that both medicine and dentistry claimed paternity of this specialty. This has resulted in the existence of at least three ways to train oral and maxillofacial surgeons: dental, medical, and dual degrees.2,5 These ways are associated with historical disputes about the denomination that the specialty must take, prerequisites for starting the training, but especially regarding the scope that an oral and maxillofacial surgeon can or should have.6,7 This has led to the publication of several studies and letters/editorials advocating one or the other training path, and in some cases the need to standardize the
training of these specialists.\(^2,4,9\)

However, there is a little explored area that relates to how research in oral and maxillofacial surgery is performed.\(^10\) In line with this, currently there are four main maxillofacial journals: British Journal of Oral and Maxillofacial Surgery (BJOMS), Journal of Oral and Maxillofacial Surgery (JOMS), International Journal of Oral and Maxillofacial Surgery (IJOMS), and Journal of Cranio Maxillofacial Surgery (JCMFS). To these four dental/surgical journals we can add the Journal of Craniofacial Surgery (JCFS), which is only considered in the category of surgery. These five journals are the main source of divulgence of research in the specialty. Each of these journals represents, to a greater or lesser extent, organizations and regions (countries) with different training paths (dental, medical, and dual-degree).

Considering the above, it is interesting to assess the patterns of citation of these five journals, looking for differences between them. Thus, the hypothesis of this study is that there are differences in the pattern of citation of the top five journals in maxillofacial surgery. We hypothesize that some journals cite and are cited in a greater proportion by dental journals, but other journals cite and are cited in a greater proportion by medical journals. If the hypothesis is accepted, it would indicate that the research in the specialty is fragmented in a similar way as the training.

Therefore, the aim of this study was to evaluate the input and output citation pattern in the year 2015 for documents published in the five main oral and maxillofacial journals using the Scopus database.

**MATERIALS AND METHODS.**

**Design:** Bibliometric study.

**Study population:** Documents indexed in the Scopus database (Elsevier B.V., RELX Group, UK). The timespan analyzed was from 1976 to 2015.

**Selection criteria:** All document types were included, through an advanced search in the Scopus platform (available at: https://www.scopus.com/search/form.uri) on September 23, 2016. We included the documents published over the period 2013–2015 by the five main oral and maxillofacial journals: BJOMS, JOMS, IJOMS, JCMFS and JCFS.

**Procedure and analysis plan:** Citation data was extracted from the advanced search in the Scopus platform (available at: https://www.scopus.com/search/form.uri).

We considered the references included by the documents published in 2015; no timespan limit was considered.

We considered the documents published in 2015 that cite documents published in 2013 and 2014 in a similar way as the impact factor (Thomson Reuters, ex ISI) is calculated. A single document account approach was used because we considered only the number of documents citing documents published in 2015, and not the number of citations (i.e.: one document can contain two or more citations for a document published in 2015).

For both citations and references we use frequency distribution tables to summarize the 20 most citing or referenced journals.

**RESULTS.**

A total of 2303 documents were published by the five main journals in 2015: 274 by BJOMS, 469 by JOMS, 269 by IJOMS, 344 by JCMFS, and 947 by JCFS.

A total of 3253 documents published in 2015 cited documents published in 2013 and 2014 in the five main journals; these were comprised of 440 by BJOMS, 860 by JOMS, 576 by IJOMS, 620 by JCMFS, and 757 by JCFS. The distribution of the 20 journals with the greatest citation count is shown in Table 1. The average self-citation was 13.19% for the five journals as a whole: BJOMS was 9.55%, JOMS was 10.81%, IJOMS was 9.20%, JCMFS was 24.68%, and JCFS was 11.62%. A total of 1024 documents from the group of these journals cited journals from the group itself, representing 31.49% of intra-group self-citation.

A total of 36,972 references were included in documents published in 2015 in the five main journals: 3686 by BJOMS, 8333 by JOMS, 6650 by IJOMS, 8958 by JCMFS, and 9345 by JCFS. The distribution of the 20 journals with the greatest reference count is shown in Table 2. The average percentage of self-referencing was 6.56% for all journals as a group, BJOMS was 9.36%, JOMS was 11.50%, IJOMS was 5.59%, JCMFS was 2.19%, and JCFS was 5.95%. A total of 7524 documents from the group of these journals referenced journals from the group itself, representing 20.35% of intra-group self-referencing.
Table 1. Distribution of the twenty journals with the greatest citation counts.

| Journal's name                                                        | BJOMS | JOMS | IJOMS | JCMFS | JCFS | Total |
|-----------------------------------------------------------------------|-------|------|-------|-------|------|-------|
| Journal of Craniomaxillofacial Surgery                                | 47    | 65   | 51    | 153   | 43   | 359   |
| Journal of Oral and Maxillofacial Surgery                            | 36    | 93   | 31    | 35    | 35   | 230   |
| Journal of Craniofacial Surgery                                      | 16    | 36   | 16    | 22    | 88   | 178   |
| International Journal of Oral and Maxillofacial Surgery              | 22    | 36   | 53    | 22    | 22   | 155   |
| British Journal of Oral And Maxillofacial Surgery                   | 42    | 26   | 16    | 9     | 9    | 102   |
| Oral Surgery Oral Medicine Oral Pathology Oral Radiology and Endodontology | 6    | 17   | 12    | 10    | 4    | 49    |
| Plastic and Reconstructive Surgery                                | 3     | 11   | 0     | 6     | 28   | 48    |
| PLoS One                                                            | 4     | 12   | 10    | 13    | 6    | 45    |
| Oral and Maxillofacial Surgery Clinics of North America             | 9     | 20   | 8     | 4     | 3    | 44    |
| Biomed Research International                                      | 4     | 5    | 8     | 5     | 10   | 32    |
| American Journal Of Orthodontics and Dentofacial Orthopedics       | 3     | 14   | 8     | 3     | 3    | 31    |
| Clinical Oral Implants Research                                     | 1     | 8    | 10    | 5     | 7    | 31    |
| Medicina Oral Patologia Oral y Cirugia Bucal                       | 8     | 4    | 2     | 4     | 8    | 26    |
| Journal of Oral and Maxillofacial Surgery Medicine And Pathology   | 3     | 3    | 5     | 7     | 5    | 25    |
| Journal of Plastic Reconstructive and Aesthetic Surgery             | 6     | 0    | 2     | 4     | 13   | 25    |
| Current Opinion in Otalaryngology and Head and Neck Surgery         | 8     | 4    | 4     | 2     | 5    | 23    |
| Facial Plastic Surgery                                               | 3     | 5    | 4     | 4     | 6    | 22    |
| Microsurgery                                                        | 3     | 5    | 0     | 5     | 8    | 21    |
| International Journal of Clinical and Experimental Medicine         | 2     | 2    | 0     | 5     | 11   | 20    |
| Aesthetic Plastic Surgery                                           | 1     | 3    | 1     | 5     | 9    | 19    |

JCMFS: Journal of Cranio Maxillofacial Surgery, BJOMS: British Journal of Oral and Maxillofacial Surgery, JOMS: Journal of Oral and Maxillofacial Surgery, IJOMS: International Journal of Oral and Maxillofacial Surgery, JCFS: Journal of Craniofacial Surgery.

Table 2. Distribution of the twenty journals with the greatest citation counts.

| Journal's name                                                        | BJOMS | JOMS | IOMS | JCMFS | JCFS | Total |
|-----------------------------------------------------------------------|-------|------|------|-------|------|-------|
| Journal of Oral and Maxillofacial Surgery                            | 276   | 958  | 642  | 715   | 407  | 2998  |
| Plastic and Reconstructive Surgery                                | 128   | 316  | 175  | 453   | 772  | 1844  |
| International Journal of Oral and Maxillofacial Surgery              | 163   | 303  | 372  | 338   | 188  | 1364  |
| Journal of Craniofacial Surgery                                      | 60    | 148  | 175  | 257   | 556  | 1196  |
| Oral Surgery Oral Medicine Oral Pathology Oral Radiology and Endodontology | 114  | 342  | 239  | 265   | 157  | 1107  |
| British Journal of Oral And Maxillofacial Surgery                   | 345   | 198  | 165  | 196   | 120  | 1024  |
| Journal of Cranio Maxillofacial Surgery                            | 60    | 163  | 138  | 468   | 113  | 942   |
| American Journal Of Orthodontics and Dentofacial Orthopedics       | 42    | 100  | 83   | 101   | 92   | 418   |
| Clinical Oral Implants Research                                     | 35    | 108  | 165  | 118   | 34   | 460   |
| Laryngoscope                                                        | 42    | 87   | 67   | 107   | 134  | 437   |
| Cleft Palate Craniofacial Journal                                  | 16    | 29   | 28   | 163   | 133  | 369   |
| Head and Neck                                                        | 47    | 84   | 50   | 111   | 51   | 343   |
| Oral Oncology                                                        | 52    | 75   | 80   | 107   | 19   | 333   |
| Annals of Plastic Surgery                                           | 18    | 54   | 35   | 68    | 154  | 329   |
| Otalaryngology Head and Neck Surgery                               | 24    | 42   | 32   | 48    | 70   | 216   |
| International Journal Of Oral and Maxillofacial Implants            | 13    | 43   | 98   | 49    | 24   | 227   |
| Archives of Otalaryngology Head and Neck Surgery                    | 29    | 47   | 32   | 63    | 55   | 226   |
| Journal of Plastic Reconstructive and Aesthetic Surgery             | 24    | 37   | 19   | 52    | 87   | 219   |
| British Journal of Plastic Surgery                                 | 20    | 45   | 18   | 49    | 71   | 203   |
| Journal of Neurosurgery                                            | 0     | 16   | 11   | 20    | 152  | 199   |

JCMFS: Journal of Cranio Maxillofacial Surgery, BJOMS: British Journal of Oral and Maxillofacial Surgery, JOMS: Journal of Oral and Maxillofacial Surgery, IOMS: International Journal of Oral and Maxillofacial Surgery, JCFS: Journal of Craniofacial Surgery.
DISCUSSION.

Our study aim was to evaluate the input and output citation pattern in the year 2015 for documents published in the five main oral and maxillofacial journals using the Scopus database.

The results of this study show a concentration of the maxillofacial research within these five journals. JOMS can be considered as the core journal of the specialty; it has the highest referencing total count and the second highest citation total count.

However, the concentration around these five journals is not as strong as we expected. In fact, just one-third of citing documents were published in this group of journals, and one-fifth in the case of referenced ones.

In addition, in the top-20 referenced and citing journal rankings the presence of plastic and reconstructive surgery, and head and neck (otolaryngology) surgery journals is clear. This pattern reminds us of the common origin and similar scope of these three specialties. Nevertheless, this pattern was not the same across all the journals under study.

Analyzing the citation count of the five main maxillofacial journals shows that JOMS attracts 20 citations from Oral and Maxillofacial Surgery Clinics of North America (OMSCNA), but JCFS attracts only three citations from this journal. This is interesting, because JOMS and OMSCNA are considered dental/surgical journals, but JCFS is a medical/surgical one. This implies that in a dental/surgical journal such as OMSCNA it is preferred to cite a journal of the same nature rather than a medical/surgical one. It is also interesting to note that these three journals are based in the USA, so the fragmentation of research in the specialty would be “dental versus medical” rather than according to region or country.

In a similar way, the citations coming from Plastic and Reconstructive Surgery (PRS), which is a medical/surgical journal, are concentrated on other medical/surgical journals such as the JCFS. A very similar situation occurs with two other plastic surgery journals, Aesthetic Plastic Surgery, and the Journal of Plastic Reconstructive and Aesthetic Surgery. IJOMS (dental/surgical) has no citations from PRS. This reinforces the idea that there is a specialty fragmentation according to the nature of the journal, be it medical or dental.

When we analyze the referencing pattern of the maxillofacial journals, we see almost the same behavior already described for the citing pattern.

The highest referencing count from JCFS goes to PRS and to JCFS itself. The journal with the second highest referencing is JCMFS; we must note that JCMFS represents the European Association for Cranio-Maxillofacial Surgery, where the training is mostly medical-based or dual-degree-based. The second journal with the greater referencing count to PRS is JOMS, with both journals based in the USA. When we see the referencing count to the journal Laryngoscope, the same pattern is apparent, with a greater referencing count from JCFS, JCMFS and JOMS, and with fewer references from BJOMS and IJOMS.

Nevertheless, there are some exceptions to the patterns described above, i.e. the American Journal of Orthodontics and Dentofacial Orthopedics (AJODO), a dental (not surgically focused) journal, has a higher referencing count from JCFS, JCMFS and JOMS. On the other hand, the Clinical Oral Implants Research, a dental journal, has a higher referencing count from IJOMS, JCMFS and JOMS. This implies that some aspects of maxillofacial research are clearly dentally based (orthodontics and dental implants), so the nature of the journal (dental, medical or dual) has no influence on these specific topics.

Some limitations must be considered: this study only analyzed the year 2015, so these results are not representative of the historical situation of oral and maxillofacial surgery research. Furthermore, only five oral and maxillofacial surgery journals were included in the analysis, but there are many other indexed journals publishing case reports, reviews, and articles related to oral and maxillofacial surgery.

Despite the above, there are no strong reasons to think that the situation in other years or journals would be different from that reported for these five journals for the year 2015.

CONCLUSION.

Using the Scopus database, the input and output citation pattern in the year 2015 for documents published in the five main oral and maxillofacial journals shows some signs of a “medical versus dental” fragmentation of research in the specialty, over a fragmentation by regions or countries.
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