New Zealand plastic surgeons’ life-time contribution to peer-reviewed literature

Tess Brian, Brandon Adams

ABSTRACT

AIM: The New Zealand Medical Association commits the New Zealand doctor to evidence-based medicine, scholarship, teaching, collaboration and communication. To assess this commitment, one measure, contribution to the peer-reviewed literature, was examined for one group of New Zealand doctors: plastic surgeons.

METHOD: Plastic surgeons with a current practising certificate were identified on the New Zealand medical register (April 2016). Scopus database was searched for publications by each.

RESULTS: Sixty-five surgeons authored 541 unique items in 134 journals, generating 8,047 citations. Between medical graduation and specialty qualification, a mean 1.8 items were published per practitioner (range 0–11). Twenty-three practitioners (35.4%) did not publish during this time. Between specialty qualification and the end of 2015, mean number of items published per surgeon was 7.3 (range 0–97). Thirteen (20.0%) surgeons had not published since specialist qualification. The general trend was for surgeons to become less productive with increasing time in practice. Mean surgeon h-index was 4.4 (range 0–26). Four surgeons (6.2%) had not published at any time.

CONCLUSION: As a group, but with exceptions and less so in later practice, New Zealand plastic surgeons would seem to demonstrate commitment to evidence-based medicine, scholarship, teaching, collaboration and communication expected of a New Zealand doctor, as evidenced by peer-review publication.

The 2011 “Consensus statement on the role of the doctor in New Zealand” expresses a commitment to evidence-based medicine, scholarship, teaching, collaboration and communication. This commitment may be demonstrated through development, application and translation of medical knowledge and practice, and by dissemination to colleagues and other professionals.

A desire to contribute evidence and understanding to professional practice is not the only motivation for medical publication, and contribution to peer-reviewed literature is not the only measure of continuing commitment to scholarship, teaching and communication. However, as a lasting and accessible resource, this literature provides a significant metric with which to examine the life-time commitment to these aspects of being a medical practitioner.

To that end, this paper considers the contribution to the peer-reviewed literature by one group of New Zealand medical practitioners: plastic surgeons.

Method

The Medical Council of New Zealand’s medical register was used to identify practitioners with vocational registration in plastic and reconstructive surgery and a current annual practising certificate as of April 2016.

The Scopus database (www.scopus.com) of peer-reviewed literature was searched for publications by each surgeon. Practitioner last names, including previous, current, hyphenated and multiple in combination and separately, were used with first names and their variants (eg, Jonathan/jon/John), and/or given name initials. When there was
uncertainty as to whether an author was the targeted surgeon, corroboration using ResearchGate (www.researchgate.net) and PubMed (www.ncbi.nlm.nih.gov/pubmed) was undertaken. Author qualifications, institutional affiliation, article topic and publication date were used to adjudicate.

For each unique practitioner, all articles, reviews, case reports, editorials and letters were recorded. Non-peer-reviewed books, chapters and technical reports were excluded. Journal, year and citations were noted for every publication accepted.

Each surgeon’s h-index (a measure of both published productivity and citation impact of those publications: an author with an index of h has published h papers, each of which has been cited in other papers at least h times) was calculated.

These data were analysed to examine the professional life-time and pre- and post-specialist qualification contribution of these New Zealand plastic surgeons to the peer-reviewed medical literature.

Results

There were 65 plastic and reconstructive surgeons registered to practise in New Zealand in April 2016 (Figure 1). Eleven (16.9%) were female.

From 1971 through to March 2016, these 65 surgeons authored 541 unique items (Figure 2) in 134 unique journals. The 10 (7.5%) most frequently used journals accounted for 62.3% (337) of the publications (Table 1). Single items appeared in a mix of 77 clinical, research and basic science journals.
Of all publications, 80.2% (434) were original articles and 5.5% (30) were subject reviews. The remaining 14.2% (77) were letters, case reports and editorials. Thirty-two items (5.9%) had a single author. Of these, 14 (43.8%) were letters. Two or more of the 65 surgeons collaborated on 74 (13.7%) publications, of which 60 (81.1%) were original articles or reviews.

The mean number of publications per practitioner was 9.7 (SD 14.3) and the median was six (range 0 to 104: Figure 3). The nine most prolific authors (13.8%) produced 50.6% (274) of the publications. Four surgeons (6.2%) had not published.

During the years between medical graduation and specialty qualification (Figure 1), a mean of 1.8 (SD 2.3) items were published.

**Figure 3:** Peer-reviewed publications per practitioner.

<table>
<thead>
<tr>
<th>Journal</th>
<th>Of 541 Publications</th>
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<tbody>
<tr>
<td>Plastic and Reconstructive Surgery</td>
<td>Number</td>
</tr>
<tr>
<td>British Journal of Plastic Surgery*</td>
<td>75</td>
</tr>
<tr>
<td>New Zealand Medical Journal</td>
<td>55</td>
</tr>
<tr>
<td>Australian and New Zealand Journal of Surgery</td>
<td>39</td>
</tr>
<tr>
<td>Journal of Plastic, Reconstructive and Aesthetic Surgery*</td>
<td>34</td>
</tr>
<tr>
<td>Journal of Craniofacial Surgery</td>
<td>29</td>
</tr>
<tr>
<td>Annals of Plastic Surgery</td>
<td>24</td>
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<tr>
<td>Journal of Hand Surgery</td>
<td>21</td>
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<tr>
<td>Burns</td>
<td>18</td>
</tr>
<tr>
<td>Journal of Clinical Pathology</td>
<td>9</td>
</tr>
</tbody>
</table>

per practitioner (range 0 to 11: median 1). Twenty-three surgeons (35.4%) did not publish during this time.

Between specialty qualification and the last full year of consideration, 2015, the mean number of items published per practitioner was 7.3 (SD 13.5), with range 0 to 97, and median of two. Thirteen (20.0%) surgeons did not publish. Four of these had qualified recently, in 2014 or 2015.

The mean number of papers per year per practitioner during surgical training was 0.2 (SD 0.2: range 0.0 to 1.4: median 0.1). Following specialist registration, until the end of 2015, the mean number of publications per year per surgeon was 0.5 (SD 0.7: range 0.0 to 4.2: median 0.2). There was a low positive correlation (Figure 4: Pearson r=0.3, coefficient of determination R²=0.1) between annual publication rate pre- and post-specialist qualification.

Of all publications produced after specialist registration, 34.4% (175) and 62.4% (317) appeared in the first five and 10 years, respectively. Omitting the outlier practitioner who had a total of 104 publications (Figure 3), 97 of which post-dated specialist registration, the general trend was for surgeons to become less productive with increasing time in specialist practice (Figure 5).

By June 2016, the 541 publications had been cited 8,047 times. Eleven items (2.0%) were referenced on more than 100 occasions (total 1,356 [16.9%]). The most cited article (195 times) appeared in 1986 and described a non-clinical technique. Eighty-two publications (15.2%) were not cited at all.

**Figure 4:** Relationship of pre- and post-surgical qualification publication rates.

**Figure 5:** Publication rate for all surgeons practising each year since specialist qualification.
All surgeons who had published (61 [93.8%]) were cited at least twice. The five most referenced authors (7.7%) accounted for 46.4% (3,731) of all citations.

The h-index for the entire 65-surgeon cohort was 44. The mean h-index per surgeon in the cohort was 4.4 (SD 4.2: range 0 to 26: median 3).

**Discussion**

This paper uniquely examines the life-time contribution to the peer-reviewed literature by a New Zealand surgical craft group. Its completeness and accuracy are limited by the integrity of the available databases. Errors such as those of author name and attribution, journal and date of publication, and article title and page numbers were common causes of duplication. This poor database entry was overcome as best able by considerable time spent data cleaning before interrogation. However, without approaching all surgeons for lists of publications, the omissions from these databases are unquantifiable.

Another limitation of this study is that those surgeons who had practised over the last 45 years, but were no longer registered to do so in April 2016, were not included in the cohort examined. Therefore, this analysis does not represent the total contribution by New Zealand plastic and reconstructive surgeons to the literature over this period. Instead, it considers the publishing habits of a group of practitioners—some mid-career, others near the beginning or end (Figure 1)—over the continuum of professional lives.

In part, this career distribution of surgeons explains the increasing number of publications per year since the 1970s (Figure 2). Likely other contributors are an increasing number of practising surgeons over this time; an increasing prevalence of research degrees among trainees and surgeons; greater productivity of later qualifying surgeons; the output of a single outlier (Figure 3); and the evolving need to publish to win selection for specialist training.

This cohort of New Zealand plastic surgeons, for whom publication as a trainee and specialist is not compulsory, produced 541 publications. Of these, 434 were original articles. Collaboration resulted in 509 multi-author publications. Their work appeared in 134 different journals, including the locally-influential non-specialty New Zealand Medical Journal (Table 1). There had been 8,047 citations, with 11 publications referenced more than 100 times. The mean h-index per surgeon was 4.4, with an h-index of 44 for the cohort. And so, as a group, these plastic surgeons would seem to demonstrate the commitment to evidence-based medicine, scholarship, teaching, collaboration and communication outlined in the consensus statement on the role of the New Zealand doctor.¹

However, four surgeons (6.2%) had not published at any time during their career (Figure 3). Perhaps more importantly, 13 (20.0%) have not published since specialty qualification. The three who qualified in 2015 may reasonably be exempted from the latter group, having had insufficient time post-qualification to publish during 2015. But, for the remaining 10 surgeons (15.4%), all but two of whom first registered specialist qualifications during 2000–2010, without specific enquiry of them, there is no explanation. Although the correlation between annual publication rate pre- and post-specialist qualification was only low (Figure 4), it may be that more mentored publication during training would help improve subsequent participation.

The general trend is for surgeon publication rate to decline with increasing time in specialist practice (Figure 5). Perhaps a greater ongoing commitment to this aspect of scholarship, teaching, collaboration and communication would occur if continuing professional development programs more generously rewarded publication. This may be important, as the requirement for evidence of continuing professional development increases and the move toward recurrent recertification of medical practitioners gathers pace.

But do New Zealand medical practitioners have an obligation to publish, and to continue to do so over their professional life-time? Surely not if they contribute observation and evidence by other means, such as conference presentation. The obligation in the consensus statement on the role of the doctor is to observe, formulate ideas and hypotheses, test, reflect and communicate, not in the method by which these are disseminated.
Competing interests:
Nil.

Author information:
Tess Brian, Plastic and Reconstructive Surgery, Waikato Hospital, Hamilton; Brandon Adams, Plastic and Reconstructive Surgery, Waikato Hospital, Hamilton.

Corresponding author:
Dr Tess Brian, Plastic and Reconstructive Surgery, Waikato Hospital, Selwyn Street and Pembroke Street, Hamilton 3204.
tessbrian0@gmail.com

URL:

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