



Academic Journals Assessed as Springboards for New Developments: A Study of Leading Anesthesia Journals Over Past 50 Years



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ABSTRACT

Purpose: The impact of academic journals on scientific activity can be measured using different approaches. The aim of this study was to assess the leading anesthesia journals as springboards for new developments in the field of anesthesia.

Methods: The selection of the topics for analysis was based on the degree of increase in the number of articles on a topic that was at the center of specialty interest during 1966–2015. The assessment of a journal's response to a new development was made by measuring the number of initial articles on a related topic. Six leading anesthesia journals were assessed collectively and individually as to whether their responses to new developments were prompt and prominent.

Results: The role of the leading specialty journals in presentation of 28 topics related to prominent new developments in anesthesia was found to depend on the nature of topics and the type of articles. Compared with all PubMed journals publishing articles associated with anesthesia in 1966–2015, the six leading anesthesia journals published 43% of drug-related research articles, 30% of technique-related research articles, and 16% of both drug- and technique-related review articles. Regarding initial publications (on new topics), this group of six journals contributed comparably more articles: from 43% to 84% of drug-related research articles, from 30% to 49% of technique-related research articles, from 16% to 33% of drug-related review articles, and from 16% to 25% of technique-related review articles. The approximate doubling of the shares demonstrates the dominance of this group of journals in the swiftness response to new anesthesia developments.

The promptness of reaction to new developments in anesthesia of each of the six leading anesthesia journals was assessed (the combination of drug- and technique-related articles) based on the number of articles published among the first (first 5 plus next 30) on all 28 topics. The ranking order of four journals (with the highest number of all 1966–2015 articles) regarding early publications was (from high to low): *Anesthesia & Analgesia*, *British Journal of Anaesthesia*, *Anesthesiology*, and *Anaesthesia*.

Conclusion: This study assesses six leading anesthesia journals for their function as springboards for new developments in anesthesia over the past 50 years. The dominance of leading journals in initial publications on 28 drug-related and technique-related topics was clearly demonstrated. The results also indicate the possibility of using promptness of response to new advances for quantitative assessment of this aspect of a journal's contribution to the specialty.

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Introduction

The impact of academic journals on scientific activity can be measured using different approaches. One is based on assessing journal quality through institutional lists established by academic leaders or through committee vote.¹ Another more objective approach is based on the assessment of how ideas presented in one publication

affect the thinking of authors of other publications, measured as a function of the citations that the publication receives. A variety of impact measures can be derived from raw citation data.² The dominant measure of scientific journals impact is the Thomson Impact Factor (IF), which is based on citation rates and published yearly as a part of the *Journal Citation Report*. The present manuscript suggests a new approach based on assessing journals' efforts to effectively inform readers (including potential new researchers) on promising advances in a related specialty. As proof of principle, this approach was used to assess the function of academic journals as springboards for

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new developments in the field of anesthesia. The history of leading anesthesia journals over 50 years (1966–2015) was assessed in two steps. First, topics with rapid increases in the number of academic publications, which indicated important new developments, were identified. Second, how prompt and how prominent the response of the journals to the emergence of these developments were determined.

Methods

The selection of topics for analysis was based on the degree to which the number of academic journals articles on the topic increased. The main tool for selection was the popularity index (PI)—the percentage of articles on the topic among all articles related to anesthesia published over the same 5-year period.³ A topic was selected if it had a maximal PI ≥ 0.5 during any 5-year period during 1966–2015 or the total number of articles on the topic reached 500. The searched topics were selected from various sources.^{4–9} The following terms were included in the searches (for drug selection—the US FDA approval after 1965): *alfentanil, atracurium, bispectral index, capnography, cisatracurium, closed-loop anesthesia, combined spinal-epidural, continuous epidural, continuous nerve block, continuous spinal, desflurane, dexmedetomidine, enflurane, entropy, etomidate, fospropofol, isoflurane, ketamine, levobupivacaine, midazolam, mivacurium, propofol, pulse oximetry, remifentanil, robotic anesthesia, rocuronium, ropivacaine, sevoflurane, spectral edge frequency, sufentanil, sugammadex, target-controlled anesthesia, transesophageal echocardiography, total intravenous anesthesia, ultrasound-guided block, vecuronium, volatile induction, and wound infiltration*. Articles related to these terms were counted using the National Library of

Medicine PubMed Web site (www.ncbi.nlm.nih.gov/pubmed), which comprises more than 27 million citations from biomedical literature and has a defined vocabulary for article indexing (MeSH terms). An individual drug name or technique was entered in the search box with the MeSH term *Anesthesia*, for example, *Fentanyl AND Anesthesia*. Articles over the entire 1966–2015 period, as well as over each individual 5-year periods, were counted for each topic. Table 1 shows that 19 drug-related and 9 technique-related topics were included.

The assessment of journals as springboards for selected developments over the 1966–2015 period was based on the promptness of their most prominent responses according to the number of initial articles on related topics. Such assessments were performed separately for research and review articles. In both cases, only articles with prominent presentation of a topic (topic-in-title) were included. This type of presentation displays topics distinctly and clearly.¹⁰ The indication [title] was placed in the search box after the name of a drug or technique, for example, *Fentanyl [title]*. As a result, only articles which had a topic in the title were included. For research articles, the following approach to the identification of initial articles was used: they were published among the first on a topic in all journals (>5000) covered by PubMed. They were divided into two categories: articles published among the first 5 and then the next 30 (35 in total). With review articles, the approach was different: the assessment was based on the number of articles published during the initial 5-year period that review publications on a topic appeared. The difference in approach was necessary because of the extreme variability in the number of published reviews for different topics.

The assessment was centered on six journals representing the field of anesthesia, based on three factors: journals of major national

Table 1
List of topics with pronounced increase in anesthesia-related articles, 1965–2015

#	Topic	PubMed search terms ^a	Years of first 5 articles ^b	Total number of 66–15 articles ^c	Maximal PI (5-y period) ^d
A. Drugs					
1	Ketamine	<i>Ketamine, CI-581, Anesthesia</i>	72–75	7136	4.6 (73–77)
2	Isoflurane	<i>Isoflurane, Forane, Anesthesia</i>	72–75	9173	5.7 (94–98)
3	Enflurane	<i>Enflurane, Ethrane, Anesthesia</i>	74–75	2615	2.8 (75–79)
4	Etomidate	<i>Etomidate, R26490, Anesthesia</i>	75–76	1418	1.0 (85–89)
5	Midazolam	<i>Midazolam, RO21-3981, Anesthesia</i>	78–81	5203	2.8 (93–97)
6	Sufentanil	<i>Sufentanil, R34995, Anesthesia</i>	79–86	1499	0.9 (97–01)
7	Vecuronium	<i>Vecuronium, ORG NC 45, Anesthesia</i>	80–82	2681	2.3 (91–95)
8	Propofol	<i>Propofol, ICI 35868, Diprivan, Anesthesia</i>	80–82	12,405	5.8 (11–15)
9	Alfentanil	<i>Alfentanil, R39209, Anesthesia</i>	81–83	1576	1.5 (92–96)
10	Atracurium	<i>Atracurium, Anesthesia</i>	81–83	1660	1.2 (88–92)
11	Sevoflurane	<i>Sevoflurane, Anesthesia</i>	81–88	5941	3.7 (05–09)
12	Mivacurium	<i>Mivacurium, Anesthesia</i>	88–89	529	0.7 (95–99)
13	Desflurane	<i>Desflurane, I 635, Anesthesia</i>	90–91	1589	1.0 (98–02)
14	Ropivacaine	<i>Ropivacaine, Anesthesia</i>	90–91	2585	1.8 (05–09)
15	Rocuronium	<i>Rocuronium, ORG 9426, Anesthesia</i>	90–93	1620	0.6 (94–98)
16	Dexmedetomidine	<i>Dexmedetomidine, Anesthesia</i>	90–94	1465	1.6 (11–15)
17	Remifentanil	<i>Remifentanil, GI 87084B, Anesthesia</i>	93–95	3044	2.4 (10–14)
18	Levobupivacaine	<i>Levobupivacaine, Anesthesia</i>	98–99	815	0.7 (05–09)
19	Sugammadex	<i>Sugammadex, ORG 25969, Anesthesia</i>	05–07	391	0.5 (11–15)
B. Techniques					
1	Capnography	<i>Capnography, Capnometry, Anesthesia</i>	85	711	0.4 (93–97)
2	Transesophageal echocardiography	<i>"Transesophageal Echocardiography", Anesthesia</i>	88–91	1802	1.2 (11–15)
3	Pulse oximetry	<i>"Pulse Oximetry", Anesthesia</i>	89–93	1132	0.9 (91–95)
4	Total intravenous anesthesia	<i>"Total Intravenous Anesthesia", TIVA</i>	91–95	1391	0.6 (93–97)
5	Target-controlled infusion	<i>"Target-Controlled Infusion", TCI, Anesthesia</i>	96–00	924	0.7 (03–09)
6	Combined spinal-epidural	<i>"Combined Spinal-Epidural", Anesthesia</i>	97–01	984	0.6 (99–03)
7	Bispectral index	<i>"Bispectral Index", Anesthesia</i>	98–01	1884	1.6 (06–10)
8	Ultrasound-guided block	<i>Ultrasound-Guided, Nerve Block</i>	03–07	1491	1.8 (11–15)
9	Transversus abdominis plane block	<i>"Transversus Abdominis Plane Block"</i>	07–09	479	0.5 (11–15)

^a Including drug's pharmaceutical code when appropriate.

^b Clinical studies with abstracts.

^c All types of articles.

^d Representing the number of articles over a 5-year period as a percentage of all articles on anesthesia over the same period.

Table 2
Number of articles on MeSH term *Anesthesia*^a in six selected journals

Journal name	Number of 1966–2015 articles ^b	2015 IF ^c
<i>Acta Anaesthesiologica Scandinavica</i>	3820	2.36
<i>Anaesthesia</i>	7011	3.43
<i>Anesthesia & Analgesia</i>	7711	3.73
<i>Anesthesiology</i>	4739	5.56
<i>British Journal of Anaesthesia</i>	5951	5.62
<i>Canadian Journal of Anaesthesia</i>	3202	2.14

^a Term of the PubMed controlled vocabulary for articles in the database of the US National Library of Medicine.

^b Articles with abstracts.

^c Web of Science, *Journal Citation Reports* (<https://jcr-incites.thomsonreuters-com/>; accessed 03/21/18).

societies of anesthesia, established before 1965, and monthly publication in English. The following journals were included: *Acta Anaesthesiologica Scandinavica*, *Anaesthesia*, *Anesthesia & Analgesia*, *Anesthesiology*, *British Journal of Anaesthesia*, and *Canadian Journal of Anaesthesia*. General information on the number of articles related to anesthesia published in these journals during the period 1966–2015 is summarized in Table 2. The articles publication in these six journals was assessed collectively and individually.

Results

Table 3 presents data on the promptness with which research articles related to 19 prominent new drug-related developments were published. It represents a collective assessment of six leading anesthesia journals. The table shows that these six journals published 6055 articles, 43% of all (14,032) drug-related research articles, initial and otherwise, during 1966–2015. At the same time, considering only the first 5 articles published on each of the 19 topics, the share of the six leading journals was twice as high—84%. After the first five articles, the share of the six leading journals among the next 30 articles published on each of 19 topics was 66%, also higher than 43%. Thus, the six indicated journals collectively were leaders in swift responses to new drug-related developments.

Table 4 presents the individual responses of the six leading journals (as in Table 3 combined responses) on 19 drug-related topics and, in addition, divided by topic. This table also presents the time of appearance of the first 5 and the next 30 articles for each topic. It reveals that, with some of the topics, there were significant deviations from the usual intervals. For example, with sevoflurane, 7 years elapsed between the publication of first and fifth articles.

Table 5 presents data on promptness in publishing research articles on nine prominent technique-related developments by the six leading journals. This group of journals was responsible for 30% of all articles on these topics during 1966–2015. If only initial publications on each of the nine topics were taken into account, the share of the six journals was 49% with the first 5 articles and 39% with the

Table 3
Role of six leading anesthesia journals^a in publishing research articles on prominent drug-related developments

	Total no. of articles in all (>5000) PubMed journals	No. of articles in 6 leading anesthesia journals	Percent of total
Among first 5 articles on 19 topics	95	80	84%
Among next 30 articles on 19 topics	569	375	66%
All articles on 19 topics, 1966–2015	14,032	6055	43%

^a *Acta Anaesthesiologica Scandinavica*, *Anaesthesia*, *Anesthesia & Analgesia*, *Anesthesiology*, *British Journal of Anaesthesia*, *Canadian Journal of Anaesthesia*.

next 30 articles. The number of initial research articles (first 5 + next 30, Table 3) on drug-related topics published by the six journals (80 + 375 = 455, Table 3) was 3.5-fold greater than the number on technique-related topics (22 + 106 = 128, Table 5); therefore, the results on technique-related articles were less demonstrative than those with drug-related articles.

Tables 6 and 7 present data on the promptness of publishing review articles on the 19 drug-related and 9 technique-related developments, respectively. The number of articles published in the six leading journals was assessed as a share of the articles published in all journals covered by PubMed. When all reviews, initial and otherwise, published in the group of six leading journals (1966–2015) were taken into account, drug- and technique-related topics received an identical 16% of total. In general, the six leading journals' role in publishing review articles was less significant than in publishing research articles. When calculations were focused only on articles published during the initial 5-year review period, the shares of six leading journals were higher: 33% on drug-related topics (Table 6) and 25% on technique-related topics (Table 7). It shows that the six leading journals responded almost twice as swiftly as all PubMed journals taken together.

Separate assessment of each of the six leading anesthesia journals regarding the publication of research articles is presented in Table 8. The degree of promptness in response to new developments varies among journals, especially as reflected in the number of publications among the first five articles. If the totals of all 28 topics are taken into account, the number of research articles published among the first five varied from 5 (*Acta Anaesthesiologica Scandinavica*) to 34 (*Anesthesia & Analgesia*). Considering the next 30 articles, the journals ranged from 30 (*Acta Anaesthesiologica Scandinavica*) to 141 (*Anesthesia & Analgesia*). Table 9 presents individual assessment of the six leading journals regarding the publication of review articles.

Any comparison between individual journals should take into account the total number of articles published by each journal. As indicated in Table 2, only four of the six selected anesthesia journals had more or less comparable number of publications during the period 1966–2015: 5000–8000 articles with abstracts. Therefore, calculation of the rank order of journals was limited to these four journals (Table 10). If the strength of a journal's early response to new developments is based on the combined results for both drug- and technique-related topics, their rank order was as follows (from high to low): *Anesthesia & Analgesia*, *British Journal of Anaesthesia*, *Anesthesiology*, and *Anaesthesia*.

Discussion

The first step in this analysis of the function of journals as springboards for new developments was the assessment of publication-based academic interests in the specialty over the past 50 years. The degree of change in interest was used to evaluate its importance. One of the most revealing indices in this regard is the PI.^{11–14} It allows the measurement of topic popularity among the authors of academic publications.¹⁵ The threshold for selection of the topic for analysis was $PI \geq 0.5$ during any of the 5-year periods during 1966–2015; 28 topics were selected (Table 1). These topics represent developments whose popularity was much higher than average and usually remained so for a very long time: 15–20 years.³ High-degree, prolonged changes in PI indicate the importance of these topics for the specialty.

The role of the six journals in the presentation of prominent new developments in anesthesia was found to depend on the nature of the topic and the type of article. The share of 1966–2015 anesthesia-related articles published by this group among all PubMed journals was 43% of articles on drug-related research, 30% on technique-related research, and 16% of review articles on both drug- and

Table 4
Research articles^a on 19 drug-related topics

#	Topic	First 5 articles							Next 30 articles								
		Years from 1st to 5th article							Years from 6th to 35th article								
		Journals ^b							Journals ^b								
		AS	AE	AA	AY	BA	CA	O			AS	AE	AA	AY	BA	CA	O
1	Ketamine	72-75	-	-	4	1	-	-	-	75-76	3	1	7	2	1	1	15
2	Isoflurane	72-75	-	-	2	2	-	1	-	75-84	2	-	7	8	5	5	3
3	Enflurane	74-75	2	-	1	1	1	-	-	75-76	1	-	6	2	1	1	16
4	Etomidate	75-76	-	-	-	-	-	-	5	76-78	-	3	4	-	5	4	14
5	Midazolam	78-81	-	2	1	-	-	2	-	81-83	2	4	3	1	3	2	15
6	Sufentanil	79-86	-	-	2	-	1	1	1	86-87	3	5	9	3	2	4	4
7	Vecuronium	80-82	-	-	-	-	4	-	1	83-84	3	2	2	5	9	-	0
8	Propofol	80-82	-	2	-	-	1	-	2	83-85	1	1	-	-	3	-	25
9	Alfentanil	81-83	-	-	-	-	1	-	4	83-84	-	2	1	1	16	2	7
10	Atracurium	81-83	1	-	-	-	3	-	1	83-84	-	6	2	3	14	1	5
11	Sevoflurane	81-88	-	-	2	2	-	1	-	88-92	1	-	8	1	4	-	15
12	Mivacurium	88-89	-	-	2	2	1	-	-	89-93	2	3	6	4	9	1	5
13	Desflurane	90-91	-	-	1	2	2	-	-	91-93	1	1	8	14	1	3	2
14	Ropivacaine	90-91	-	-	2	1	1	-	1	91-95	1	2	9	4	4	2	9
15	Rocuronium	90-93	-	2	1	-	1	1	-	93-94	1	5	3	4	3	3	11
16	Dexmedetomidine	90-94	1	-	1	2	1	-	-	94-01	1	4	7	7	5	-	6
17	Remifentanil	93-95	-	-	3	2	-	-	-	96-98	-	1	8	9	2	-	10
18	Levobupivacaine	98-99	-	2	1	1	1	-	-	00-03	1	1	14	-	2	-	12
19	Sugammadex	05-07	-	-	2	2	1	-	-	07-10	-	2	5	6	7	-	10
	Total		4	8	25	18	19	6	15		23	43	109	74	95	31	194

^a Clinical studies with abstracts (PubMed filters "Humans" and "Abstract" were activated).

^b AS, *Acta Anaesthesiologica Scandinavica*; AE, *Anaesthesia*; AA, *Anesthesia & Analgesia*; AY, *Anesthesiology*; BA, *British Journal of Anaesthesia*; CA, *Canadian Journal of Anaesthesia*; O, all other journals covered by PubMed.

technique-related topics. Reasons for the difference between the research and review articles are unclear. However, it is possible that the significantly higher standards/requirements for reviews in leading journals would limit publications on new topics.

Regarding initial publications, the group of six journals always contributed comparably more articles. When only the first five research articles on each topic were counted, the percent produced by the six leading journals increased: from 43% to 84% with drug-related articles and from 30% to 49% with technique-related articles. When the next 30 initial research articles were taken into account, the percentage published by the six leading journals also increased but to a lesser degree: from 43% to 66% with drug-related articles and from 30% to 39% with technique-related articles. The percentage of early review articles published by the six leading journals was calculated differently: by counting articles published during the first 5 years after the first review appeared. The results also indicated higher shares of early publications for the group of six journals: 33% with drug-related reviews and 25% with technique-related reviews, both compared with 16%. The impressive differences in the combined share of six journals among all types of articles demonstrate the important role of this group in swift responses to new anesthesia developments.

In the above-reported results, the degrees of increases in the combined shares of the six journals with initial publications were

Table 5
Role of six leading anesthesia journals^a in publishing research articles^b on prominent technique-related developments

	Total no. of articles in all (>5000) PubMed Journals	No. of articles in 6 leading anesthesia journals	Percent of total
Among first 5 articles on 9 topics	45	22	49%
Among next 30 articles on 9 topics	270	106	39%
All articles on 9 topics, 1966-2015	2680	806	30%

^a *Acta Anaesthesiologica Scandinavica*, *Anaesthesia*, *Anesthesia & Analgesia*, *Anesthesiology*, *British Journal of Anaesthesia*, *Canadian Journal of Anaesthesia*.

^b Clinical studies with abstracts (PubMed filters "Humans" and "Abstract" were activated).

considerable and more or less equal despite various categories of articles—these shares almost doubled. One can only suggest that the dominance of leading academic journals in initial publications may be a phenomenon not limited only to anesthesia journals. Why are the leading anesthesia journals preeminent in the response to new developments? The choices made by contributing authors are critical. Authors who initiate or contribute to a new development want to get the attention of the largest and most interested audience; therefore, journals of the largest national societies of anesthesiologists are prime choices for submissions. The role of the editorial boards is also very important. This is especially evident when a journal features several or many articles on one topic in the same issue (or published in a journal supplement). In addition, review articles are often written in response to editorial board invitations.

This study was centered on six journals. All of them are official journals of major national societies of anesthesia, established before 1965, with monthly publications in English. There were many other anesthesia journals which also provided initial articles related to the discussed topics. The most significant contributor among them is *Acta Anaesthesiologica Belgica* (articles in English). This journal was not included in the analysis because it published only four issues a year. As a result, *Acta Anaesthesiologica Belgica* published 635 articles (total number of articles with abstracts during 1965-2015). This is five times less than that published by *Canadian Journal of*

Table 6
Role of six leading anesthesia journals^a in publishing review articles^b on prominent drug-related developments.

	Total no. of reviews in all (>5000) PubMed journals	No. of reviews in 6 leading anesthesia journals	Percent of total
Reviews published during initial 5-y period on 19 topics	118	39	33%
All reviews on 19 topics, 1966-2015	692	114	16%

^a *Acta Anaesthesiologica Scandinavica*, *Anaesthesia*, *Anesthesia & Analgesia*, *Anesthesiology*, *British Journal of Anaesthesia*, *Canadian Journal of Anaesthesia*.

^b PubMed "Review" filter was activated.

Table 7
Role of six leading anesthesia journals^a in publishing review articles^b on prominent technique-related developments

	Total no. of reviews in all (>5000) PubMed journals	No. of reviews in 6 leading anesthesia journals	Percent of total
Reviews published during initial 5-y period on 9 topics	80	20	25%
All reviews on 9 topics, 1966-2015	284	45	16%

^a *Acta Anaesthesiologica Scandinavica*, *Anaesthesia*, *Anesthesiology*, *Anesthesiology*, *British Journal of Anaesthesia*, *Canadian Journal of Anaesthesia*.

^b PubMed “Review” filter was activated.

Anaesthesia, an included journal with the lowest number of articles: 3202 (Table 2). Three major European journals of anesthesia—*Der Anaesthesist*, *Minerva Anesthesiologica*, and *Annales Francaises d’Anesthesie et de Reanimation*—were not included in the analysis because of the language criteria. One of these journals—*Minerva Anesthesiologica*—published articles in English, however, only since 2006. As a result, the total number of related articles in English was only 827, also many times lower than that in any of the included journals.

Two observations of this study regarding the range of values reflecting promptness of reaction to new developments indicate that the early publications could in principle be used to measure the quality of a journal as a springboard for specialty advancement. First, the difference in the share of early publications on important new developments between the six leading anesthesia journals and all PubMed journals publishing on anesthesia might be rather large: 84% vs 43% with the first five research articles on the drug-related topics. Second, the range of differences between six individual journals in the shares of early (first 5 plus next 30 articles) publications on all drug- and technique-related topics is very large: from a minimum of 30 (*Acta Anaesthesiologica Scandinavica*) to the maximum of 141 articles (*Anesthesia & Analgesia*).

Although the primary purpose of an academic journal is to present new achievements in a particular field of science, it actually serves many functions including dissemination of scholarly work, evaluation and verification of the content of such work, and also archiving it.^{16,17} Research dissemination includes giving researchers a venue to convey their findings to one another and contributing to progress of the specialty. The journal’s function as a springboard for novel directions is therefore an important part of this process, and the promptness of a journal’s reaction to a new development is critical for rapid progress. Any novel area of research requires an influx of new participants. One of the most important contributions of a journal to advancement in a new area is to provide detailed information from researchers already working in that area to those who are considering joining the new research effort. In this regard, it is of interest

Table 8
Number of research articles in six leading anesthesia journals published among the first or prominent developments in anesthesia, 1966-2015

		Six anesthesia journals					
		AS	AE	AA	AY	BA	CA
Among first 5 articles	19 drug-related topics	4	8	25	18	19	6
	9 technique-related topics	1	5	9	2	5	0
	Total of 28 topics	5	13	34	20	24	6
Among next 30 articles	19 drug-related topics	23	43	109	74	95	31
	9 technique-related topics	7	21	32	16	19	11
	Total of 28 topics	30	64	141	90	114	42

AS, *Acta Anaesthesiologica Scandinavica*; AE, *Anaesthesia*; AA, *Anesthesia & Analgesia*; AY, *Anesthesiology*; BA, *British Journal of Anaesthesia*; CA, *Canadian Journal of Anaesthesia*.

Table 9
Number of review articles in six leading anesthesia journals, published during initial 5-year period of prominent developments in anesthesia, 1966-2015

	Six anesthesia journals					
	AS	AE	AA	AY	BA	CA
19 drug-related topics	2	6	16	4	9	2
9 technique-related topics	2	10 ^a	2	2	2	2
Sum of 28 topics	4	16	18	6	11	4

^a Multiple articles in one issue on target-controlled infusion.

that researchers who are very productive in well-established areas of biomedicine demonstrate a disproportionately high tendency to switch to emerging areas of biomedical research.¹⁸ Thus, even a very productive researcher in an established area is susceptible to journal-mediated “seduction” toward a novel research direction.

The assessment of a journal quality initially was based on opinions of the academic leaders of a specialty, often through committee vote.¹ Analysis of the listing of a journal in relevant bibliographic databases is another approach to evaluate the journal’s quality. Presence of a journal in various indexation databases (such as PubMed [includes MedLine], Embase, Scopus, Google Scholar, Web of Science) is considered to be of higher scientific quality as compared to nonindexed journals. A very important approach to the assessment of a journal is associated with measuring the number of citations. With this approach, scientific impact is measured as a function of the citations that the articles published in a journal received. A variety of impact measures can be derived from raw citation data.² The dominant measure of scientific journals impact is the Thomson IF, which is published yearly as a part of the *Journal Citation Report*. It is used as a proxy for the relative importance of a journal within its field. IF has many drawbacks; however, it is widely used mainly because of the lack of accepted alternatives.^{19,20} All impact measures derived from citation data have an advantage of being objective indices. Their common attribute is that they measure the reputation of a journal in general. The number of citations reflects many aspects of the journal activity as a whole because the authors cite other publications with very different aims. Unlike IF, or any other citation-based index, assessment of the promptness of a journal reaction to a novelty reflects a specific function—providing the springboard for a new development. Whether this index selectively reflects important developments or it responds to any new beginning, important or not, needs to be elucidated.

The data presented above reflect the 50-year history of the six leading anesthesia journals functioning as springboards for new developments in the specialty. These data may also suggest that the promptness of a journal’s response in research publications on new advances can be considered for the development of a specific index assessing this aspect of the journal’s function.

Table 10
Rank order of four leading anesthesia journals according to strength of their early responses to pronounced developments in anesthesia (drug- or technique-related research articles)

Journal’s symbol ^a	Drug-related rank	Technique-related rank	Combined rank
AE	4 (51) ^b	2 (26)	4 (77)
AA	1 (134)	1 (41)	1 (175)
AY	3 (92)	4 (18)	3 (110)
BA	2 (114)	3 (24)	2 (138)

^a AE, *Anaesthesia*; AA, *Anesthesia & Analgesia*; AY, *Anesthesiology*; BA, *British Journal of Anaesthesia*.

^b In parentheses, the number of research articles published among the early responses (first 5 and next 30 articles).

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