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Healthcare marketing: A review of the literature based on citation analysis

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ABSTRACT

This study identifies the principal sources of knowledge in the healthcare marketing field based on the most prolific and influential journals and authors, drawing on a sample of 1,950 articles published in 11 journals from 1987 to 2016. The three most influential journals are the *International Journal of Pharmaceutical & Healthcare Marketing*, the *International Journal of Healthcare Management*, and the *Academy of Health Care Management Journal*. *Health Marketing Quarterly* is another highly influential and prolific journal. The most prolific authors are Brian Smith, David Loudon, Donald Self, and Robert Stevens. The most influential authors, on the basis of fractional citations, are Philip Brown, Renuka Garg, and Jayesh Aagja. This is the first study to systematically review the burgeoning body of healthcare marketing literature with the aim of mapping the research that has been undertaken in this area. This is by far the most comprehensive review on this topic to date.

KEYWORDS

Advertising; bibliometric; brand; consumer; media; product; services; strategy

Introduction

The global healthcare industry is colossal, with an estimated total manufacturers' revenue of \$1.85 trillion in 2018 (Das, 2018) and with projected healthcare spending of \$8.7 trillion in 2020 (Deloitte, 2018). According to Deloitte (2018), two of the leading challenges confronting healthcare stakeholders are “engaging with consumers and improving the patient experience,” both of which are entirely within the scope of marketing. It was recommended that healthcare organizations take steps to understand customer behavior and preferences and to develop programs that meet each customer's expectations in a personalized manner. It was also suggested that healthcare organizations utilize advancements in technology in order to enhance customer communication; this includes the use of social media, telehealth, and virtual reality to engage more closely with customers. It was found that a better patient experience could boost hospitals' financial

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performance and improve their operations. The presence of marketing departments in hospitals has been linked to hospitals' market orientation and improved performance (Atilla, Tengilimoglu, Dursun-Kilic, & Ekiyor, 2015).

Healthcare marketing is defined as the application of marketing strategies and tactics to the "broad, heterogeneous, and complex field of health" (Crié & Chebat, 2013). The term "healthcare marketing" has been applied to the marketing of life sciences (Stremersch & Van Dyck, 2009) and health services (Berry & Bendapudi, 2007) as well as to social marketing (Hastings & Saren, 2003). The marketing of services is a major domain within mainstream marketing, and healthcare marketing shares many characteristics with the marketing of intangible services (Berry & Bendapudi, 2007). The pioneering researchers like Berry and Bendapudi (2007) are encouraging other scholars to pursue research in this area, which offers high potential for making a positive contribution.

Research in healthcare marketing has been on the rise in line with the growth that has occurred in the healthcare industry (Crié & Chebat, 2013). The application of marketing strategies and tactics is now considered necessary for the success of hospitals in the United States and in other jurisdictions with a large private healthcare system. These healthcare firms need to monitor environmental trends in order to develop and achieve their strategic goals. Marketing helps healthcare firms to expand their services and reduce their costs (Grover, 2016). However, there is also an argument that healthcare is an atypical service for a number of reasons, including the fact that this industry comprises both non-profit and for-profit organizations and the fact that patients are substantially different from other kinds of customers as the services that they seek are almost always needs and not just wants (Purcărea, Gheorghe, & Gheorghe, 2013). Thus, it is suggested that healthcare patients are different from customers since they are typically in dire need of medical services and thus are more sensitive and demanding. Yet, many patients are not receiving medical treatment joyfully because they might consider the treatment to be "unwanted" despite its essential character; this contrasts with customers who are glad to buy a new product or service (Purcărea et al., 2013). Furthermore, rather than consider healthcare marketing a distinct area, many scholars and practitioners view it as a component of social marketing or services marketing (Purcărea et al., 2013).

Nonetheless, from an organizational point of view, healthcare firms have to undertake activities that are akin to marketing in order to satisfy their patients as well as operate efficiently and profitably. Stremersch (2008) explains that research fields can be classified into three categories: topic (e.g., consumption behavior), method (e.g., ethnography), and application area (e.g., service marketing, high-tech marketing). Healthcare marketing is

a specific application area within marketing as some fields necessitate industry-specific knowledge (Stremersch & Van Dyck, 2009).

The mainstream marketing journals are increasingly publishing papers on healthcare marketing (Stremersch, 2008). Additionally, several specialist journals that focus particularly on healthcare marketing were launched during the two previous decades. Nevertheless, there is a dearth of literature-review studies that synthesize the extant body of research and provide directions for future research. Literature reviews play an important role in the growth of any discipline as they synthesize published research, develop insights, identify research gaps, and provide directions for future research. Despite the large body of literature in the field of healthcare marketing, there is an acute shortage of literature reviews in this field. In fact, to the best of our knowledge, there is not a single study that provides a comprehensive and integrative synthesis of the healthcare-marketing literature. Williams and Plouffe (2007) consider the use of a systematic literature review to examine the state of knowledge development in a particular academic field to form “a critical step in any discipline’s growth and maturity” (p. 408). They further assert that a review of articles published in peer-reviewed journals is “one of the most useful and relevant approaches for evaluating a field’s accrued knowledge” (p. 408).

Thus, the current study attempts to fill this void by conducting an integrative review of the existing healthcare-marketing literature. The objective of this paper is to systematically review the articles published in healthcare journals over last three decades. Specifically, we pose the following research questions:

1. How has the field evolved over time in terms of the number of scholarly articles?
2. Which journals are the most prolific in this area and what has been the impact of these journals in terms of their overall contribution to the development of scholarly understanding of healthcare marketing exhibited by the number of citations per year
3. What is the extent of collaboration (i.e., co-authorship) and how does the number of citations vary by the size of the collaborating team?
4. Who are the most prolific authors in this field by total number of publications and by adjusted appearance?
5. Who are the most influential authors by total and fractional citations?
6. Which articles are the most influential in terms of total citations and citations per year?

None of the previous research has attempted to answer the aforementioned questions. The main motivation for the current study is to

determine the sources of knowledge (specifically the articles, authors, and journals) that are making significant contributions to the field of healthcare marketing. The identification of the relevant quality of these parameters will help us to identify the notable contributions to the literature. A significant implication of this study is the identification of the most influential prior research work. In particular, the documentation of the respective contributions of scholars and journals is important in terms of understanding the evolution of this field. For instance, scholars across different disciplines have examined the impact of authors and journals (Chatha, Butt, & Tariq, 2015; Nusair, Butt, & Nikhashemi, 2019); yet there is no published study in the healthcare-marketing field that has examined the impact and influence of journals and scholars. This study departs from the existing literature reviews in two major respects, namely the breadth and scope of the subject matter. For example, this study implements a holistic approach by examining a large body of literature. Additionally, it examines the sources of knowledge with respect to productivity and influence.

After the introduction, this paper is structured into four major sections: (a) the literature review provides an overview of existing reviews in this field; (b) the methodology section delineates how the data were collected, analyzed, and tabulated; (c) the results section presents the findings, mainly in the form of tables; and (d) the final section concludes with a discussion and an explanation of the limitations.

Literature review

The small number of studies that have synthesized the literature in this field are briefly discussed in this section. Smith, Álvarez, and Chanda (2011) systematically reviewed 68 papers in the field of medical tourism under the umbrella of a bilateral trade relationships. They state that the importing countries are those from which the medical tourists originate (mainly countries in North America and Western Europe). The exporting countries are those that provide services to the medical tourists (mainly countries in Latin America, Eastern Europe, Africa, and Asia). The risks and opportunities are discussed for both the importing and the exporting countries. Exporting countries can earn foreign exchange and reverse the tendency towards brain drain while importing countries can reduce their waiting lists and healthcare costs. On the darker side of the picture, exporting countries may risk neglecting their local population and importing countries may risk undermining their quality of care and incurring legal liability. If the bilateral healthcare trade is considered instead of the multi-lateral healthcare trade, the positive aspects can be amplified and harvested and the negative aspects can be minimized. This includes increased

communication between physicians in the two countries, better law-enforcement mechanisms, and the establishment of doctor exchanges or education programs. The researchers concluded that more data need to be collected in order to ensure that the results are more concrete; they also concluded that it is better to consider bilateral healthcare trade instead of multilateral healthcare trade.

Fischer (2014) analyzed 62 studies drawn from the medical and social sciences literature with a focus on hospital marketing communication. The author proposes a conceptual framework linking hospital positioning with marketing communication. The hospitals mainly use three communication channels—public relations, online media, and direct advertising and related promotional tools. The content is related to three aspects—the organization, services, and public health. The author identified four hospital-positioning archetypes—the corporate value performer, the service provider, the quality leader, and the public hero and trusted adviser.

Koseoglu, Akdeve, Gedik, and Bertsch (2015) synthesized 97 articles on strategic management published in health-management journals. The articles were evaluated based on the journals, the pattern of co-authorship, the authorship region and institutions, research themes, and methodology. Some of the most frequently examined topics in journal articles are hospital management and management strategies, healthcare strategy and organizations, strategic management and health services, and strategic planning and analysis. It was found that topics related to strategic management were less popular in health-management journals. In a nutshell, it was suggested that there is a need for a journal that would include articles focused more heavily on strategic-management theories and applications. Another important finding of this study is that cooperation among researchers (either in the same discipline or in different disciplines) is a prerequisite for the advancement of the field. Cooperation and the contributions of renowned researchers play a significant role in the recognition and development of the field. Most of the institutions that are contributing to research in the health-management field are universities based in the United States. Developed countries are generally making greater contributions towards research in this field.

The literature review makes it evident that no previous study has evaluated the state of research in healthcare marketing with a scope and a perspective that are similar to those employed by the current study. The existing reviews, which each serve a specific purpose, are narrowly focused and therefore review only a small number of studies. The results of the current review are expected to fill this gap in the extant literature by chronicling the state of research from a broader perspective and by including a large body of literature, unlike any previous study.

Methodology

This study uses a systematic literature-review method “with defined research questions, search process, data extraction and data presentation” (Kitchenham et al., 2009, p. 9). A rigorous approach using Weber’s (1990) protocol was adopted for the data collection, coding, and presentation. This paper uses citation analysis to conduct a bibliometric analysis of the literature in the field of healthcare marketing. Bibliometrics is “the quantitative study of physical published units, or of bibliographic units, or of the surrogates for either” (Broadus, 1987, p. 376). The bibliometric method provides an opportunity to synthesize the “dramatically increasing literature in each field” (Zupic & Čater, 2015).

This study implements two bibliometric performance metrics—productivity metrics and impact metrics (Hall, 2011). Productivity metrics employs counting to compile the number of papers published by each individual author, journal, institution, and so on. Impact metrics computes the total citations and number of citations per year by each individual author, journal, institution, and so on. Citation analysis is used to measure influence in academia (Liu, Zhang, & Guo, 2013). Publications with a large number of citations are presumed to have useful ideas for future research (Jeung, Yoon, Park, & Jo, 2011) and their authors are considered influential in the field (Feng, Zhu, & Lai, 2017). The major reason for the success of bibliometric techniques, like citation analysis, is the conviction that they can measure both quality and influence (Schoonbaert & Roelants, 1996).

Citation analysis is very common in other management disciplines and several studies using this method have been published in top-tier journals. These disciplines include marketing (e.g., Chan, Lai, & Liano, 2012; Baumgartner & Pieters, 2003), management (e.g., Calma & Davies, 2016; Liu, Lu, Lu, & Lin, 2013), operations (e.g., Chatha et al., 2015; Pilkington & Meredith, 2009), information systems (e.g., Grover, Gokhale, Lim, Coffey, & Ayyagari, 2006; Goodrum, McCain, Lawrence, & Giles, 2001), tourism (e.g., Nusair et al., 2019; McKercher, 2008), human resources (e.g., Jeung et al., 2011), economics (e.g., Hoepner, Kant, Scholtens, & Yu, 2012), accounting (e.g., Chan & Liano, 2009), and finance (e.g., Chung, Cox, & Mitchell, 2001).

In this type of paper, a significant amount of time and attention is invested into “identifying and screening publications for inclusion in the review” (Belter, 2016, p. 2766). It follows that the first step in citation analysis is article selection. Normally prior literature is examined in order to identify keywords or journals for sample selection. However, no such literature review was found in the field of healthcare marketing. Thus, after an iterative process of searching healthcare marketing journals on Google Scholar and on online databases, the following 11 journals were

identified: *Academy of Health Care Management Journal*, *Asia Pacific Journal of Health Management*, *Health Marketing Quarterly*, *Health Services Management Research*, *International Journal of Healthcare Management*, *International Journal of Healthcare Technology and Management*, *International Journal of Medical Marketing*, *International Journal of Pharmaceutical & Healthcare Marketing*, *Journal of Management & Marketing in Healthcare*, *Journal of Medical Marketing*, and *Journal of Pharmaceutical Marketing & Management*.

The references for all of the 4,581 accessible articles were downloaded from online databases. The reference for each article (comprised of the title, journal name, publication year, abstract, and so forth) was exported to an Excel spreadsheet for data entry. Each reference was given a unique identifier. It was decided to limit the articles to a period of 30 years, spanning 1987 to 2016, thus reducing the number of articles to 4,351. The references were scanned for duplicate articles, book reviews, editorials, errata, corrigenda, and brief commentaries. The total of 1,040 duplicates and 230 other references were classified as non-academic articles, thus further limiting the sample size to 3,081.

Further shortlisting was conducted in two stages. During the first stage, all 1,569 of the articles that had been published in six journals whose title includes the keyword “marketing” were incorporated into the sample. During the second stage, the 1,512 articles that had been published in the five other journals—*Health Services Management Research*, *International Journal of Healthcare Technology and Management*, *International Journal of Healthcare Management*, *Asia Pacific Journal of Health Management*, and *Academy of Health Care Management Journal*—were searched for marketing keywords. A keyword search was performed using the following: advertising, attitude, awareness, brand, communication, consumer, customer, distribution, market, marketing, media, perceptions, positioning, price, product, promotion, public relations, sales, segment, service, strategy, and target market. The title and abstract of each article, if needed, were scanned and added to a shortlist of another 381 relevant articles, thus bringing the total sample to 1,950 articles. The citations from Google Scholar were then entered for each article. The analysis was presented in the form of a frequency distribution, composed of articles and citations, the respective percentages of articles and citations, and the average number of citations per year. Since older articles are likely to have a greater number of citations, a standardized “average citations per year” was calculated by dividing the total number of citations by the number of years that have elapsed since the article was published. For example, an article published 10 years ago with a total of 200 citations would have 20 average citations per year. Therefore, this study provides a retrospective analysis of healthcare

Table 1. Articles and citations by time frame.

Timeframe	Articles	Articles %	Citations	Citations %	Average citations per year
1987–1991	146	7.5	1,171	6.1	0.29
1992–1996	185	9.5	1,666	8.7	0.40
1997–2001	220	11.3	2,752	14.4	0.72
2002–2006	414	21.2	5,170	27.0	0.95
2007–2011	566	29.0	6,304	32.9	1.42
2012–2016	419	21.5	2,071	10.8	1.63
Total	1,950	100.0	19,134	100.0	1.11

marketing that extends far beyond simple citation counts. In fact, this is the first study in this field to apply the fractional citation score, the adjusted appearance, and average citations per year.

Results

The results of this research study are divided into two major categories—journals and authors. Nevertheless, we begin with a broad overview of the field.

Overview

Table 1 represents the data based on the time frame. We divided the 30-year time period into successive five-year intervals starting in 1987 and ending in 2016, a process that generated a total of six temporal categories. The number of articles, the total citations, and the average citations per year are provided for each time frame. The values clearly represent the trend in the articles published in each time period. There has been a marked increase in the publication of articles over time. Nevertheless, the greatest number of articles was published during the period from 2007 to 2011, with the highest percentage being 29%. Thus, there has been a noticeable decline since 2011. The total number of citations has also witnessed the same trend with the greatest volume of citations having occurred during the period 2007–2011. Older papers typically receive more citations than recent papers. A comparison of the percentage of articles with the percentage of citations within the same time frame surprisingly revealed that the proportion of citations was low during 1987–1991 and 1992–1996. This is contrary to the norm since older articles usually have a greater number of citations based on the fact that they have been in circulation for a longer period of time. Understandably, the proportion of citations was very low during the latest time frame, 2012–2016, because newer papers typically receive a smaller number of citations. On the other hand, the low proportion of citations during the earlier time frame suggests that the researcher did not find the earlier work in this field to be highly impactful. This conclusion is confirmed by the fact that the average number of

Table 2. Articles and citations by journals.

N	Journal	Articles		Citations		Average citations per year
		Articles	%	Citations	%	
1	Health Marketing Quarterly	666	34.2	7,583	39.63	1.09
2	Journal of Medical Marketing ^a	323	16.6	2,314	12.09	0.95
3	Health Services Management Research	203	10.4	3,218	16.82	1.33
4	International Journal of Pharmaceutical & Healthcare Marketing	202	10.4	2,216	11.58	2.04
5	Journal of Pharmaceutical Marketing & Management	130	6.7	614	3.21	0.28
6	Journal of Management & Marketing in Healthcare ^b	126	6.5	672	3.51	0.75
7	International Journal of Medical Marketing ^a	122	6.3	1,419	7.42	0.81
8	International Journal of Healthcare Technology and Management	75	3.8	620	3.24	0.75
9	International Journal of Healthcare Management ^b	56	2.9	282	1.47	2.04
10	Asia Pacific Journal of Health Management	36	1.8	82	0.43	0.75
11	Academy of Health Care Management Journal	11	0.6	114	0.60	1.53
	Total	1,950	100.0	19,134	100.00	1.11

^aJournal of Medical Marketing was published as International Journal of Medical Marketing from 2000 to 2004.

^bInternational Journal of Healthcare Management was published as Journal of Management & Marketing in Healthcare from 2007 to 2011.

citations per year is the lowest for the earliest time frame (0.29 for 1987–1991 and 0.40 for 1992–1996) and is the highest for the most recent time frame (1.63 for 2012–2016 and 1.46 for 2007–2011).

Most prolific and influential journals

Table 2 provides the publications by journal. This table summarizes the articles, citations, and average number of citations per year for each journal. There are 11 journals in total but, in reality, there are only nine as the *International Journal of Healthcare Management* was published as the *Journal of Management & Marketing in Healthcare* from 2007 to 2011. In addition, the *Journal of Medical Marketing* was published as the *International Journal of Medical Marketing* from 2000 to 2004. Nevertheless, we are treating them separately in this study based on the fact that they had different names.

The top-four journals with the greatest number of publications are *Health Marketing Quarterly* (34.2%), the *Journal of Medical Marketing* (16.6%), *Health Services Management Research* (10.4%), and the *International Journal of Pharmaceutical and Healthcare Marketing* (10.4%). Collectively, these four journals account for 71.5% of all of the articles in this area and for 80% of the total citations. However, when the most influential journals are assessed based on the average number of citations per year, *Health Marketing Quarterly* and the *Journal of Medical Marketing* do not make it onto the list of the top four. On the other hand, the *International Journal of Pharmaceutical and Healthcare Marketing* and the

International Journal of Healthcare Management appear to be the most influential (both with average citations of 2.04 per year), followed by *Academy of Healthcare Management* (with average citations of 1.53 per year) and *Health Services Management Research* (with average citations of 1.33 per year). *Health Marketing Quarterly* is ranked fifth in terms of influence with average citations per year of 1.09. Average citations per year is calculated by dividing the total citations of each article published in the journal by the number of years that have elapsed since the article was published. Then each resulting number for each article is added together and the total is divided by the total number of papers.

Interestingly, most of the journals are from the United Kingdom and only two journals—*Health Marketing Quarterly* and the *Journal of Medical Marketing*—are from the United States. When we look at the breakdown of articles by time frame, it appears that *Health Marketing Quarterly* was the dominant journal during the initial years, with 70.5% of all articles during 1987–1991, 81.6% of all articles during 1992–1996, and 52.3% of all articles during 1997–2001. This measure declined significantly to a share of less than 20% during 2002–2006 and 2007–2007 but subsequently resurged to capture a 27.7% share during 2012–2016. The other dominant journals over the most recent time frame are the *International Journal of Pharmaceutical and Healthcare Marketing* (25.8%) and the *Journal of Medical Marketing* (17.9%). *Health Marketing Quarterly* had the largest number of citations during the first four time frames, spanning the period 1987–2011. The *International Journal of Pharmaceutical and Healthcare Marketing* marginally outperformed *Health Marketing Quarterly* during 2012–2016 by receiving nine more citations. The most influential journal over the most recent time period, 2012–2016, is *Health Services Management Research* with 2.27 citations per year.

ABDC ranking and the Scopus index

These journals are classified according to the ranking system created by the Australian Business Deans Council (ABDC) as A*, A, B, C, and NL (non-listed). Interestingly, none of the journals in this field is ranked A* or A. Only one journal, *Health Marketing Quarterly*, is ranked as B, five journals are ranked as C, and the other five are NL. The largest category of articles, 39.1%, is published in C-ranked journals, while 34.2% are published in B-ranked journals and 26.7% are published in NL journals. The highest proportion of citations, 39.6%, was attained by B journals, followed by 36% by C journals and 24% by NL journals. Normally, the higher-ranked journals attain higher average citations per year. Interestingly, in this field the

highest average per year, 1.30 per year, is attained by NL journals, followed by 1.09 citations per year by B journals.

The percentage shares of articles and citations of B-ranked journals are higher for the earlier time periods spanning 1987–2001. However, these values are higher for NL journals for the subsequent periods spanning 2002–2016. The probable reason for this trend is the fact that it takes time for journals to gain recognition and listings. The average number of citations per year is higher for B and C journals for the earlier time frames, spanning 1987–2011. It was only during the latest time period, 2012–2016, that NL journals achieved the highest number of citations per year.

The Scopus index is another measure for assessing the quality of journals. A large majority, 85.5% of the articles, were published in Scopus-indexed publications. Three journals—the *Academy of Health Care Management Journal*, the *Journal of Pharmaceutical Marketing & Management*, and the *International Journal of Medical Marketing*—are not included or are not active in Scopus. The *International Journal of Medical Marketing* is now published as the *Journal of Medical Marketing* and so it is understandable that it is not currently listed.

Number of co-authors

Another important factor considered in this study is the relationship between the number of co-authors on the one hand and the number of articles, the total number of citations, and the average number of citations per year on the other hand (Table 3). Two-author studies comprise the largest category (34.8%), followed by studies by one author (29.7%) and by three authors (21.4%). The total number of citations follows the same pattern. However, based on the average citations per year, research articles contributed by five authors are ranked the highest, followed by four- and six-author articles (ranked second and third respectively). Thus, we can conclude that a larger and more diverse group of individuals contributes to more influential research work.

Table 3. Articles and citations by number of authors per study.

No. of authors	Articles	Articles %	Citations	Citations %	Average citations (AC) per year	Rank AC
1	580	29.7	4,695	24.5	0.74	7
2	679	34.8	7,332	38.3	1.17	5
3	417	21.4	4,381	22.9	1.32	4
4	157	8.1	1,500	7.8	1.40	2
5	66	3.4	774	4.0	1.53	1
6	29	1.5	234	1.2	1.39	3
7 and more	22	1.1	218	1.1	1.14	6
Total	1,950	100.0	19,134	100.0	1.11	

The proportion of single-authored research has been on a gradual decline and most recently stood at 16.2% during 2012–2016. Two-author studies, still the largest category, declined from a high of 50% during 1992–1996 to 32% during 2012–2016. Three-author studies increased significantly from a low of 14.1% during 1992–1996 to a high of 29.1% during 2012–2016.

Most prolific and influential authors

The ranking of the most prolific and most highly cited authors indicates the principal sources of knowledge and the impact of their research. Authors are ranked according to their total number of publications, a measure called “total appearance.” The publications with multiple authors were adjusted by assigning equal weights to each co-author (one divided by the number of co-authors), thus resulting in “adjusted appearance.” Table 4 lists the most prolific authors by total and adjusted appearance. Brian D. Smith is ranked number one based on both total (13) and adjusted appearance (9.87). David L. Loudon and Donald R. Self are ranked second (12) and Mohamed Azmi Hassali is ranked fourth with 11 total appearances. Paulo Moreira (5.83), Mickey C. Smith (5.67), and Stephen T. Moore (5.50) are respectively ranked second, third, and fourth based on adjusted appearance.

Brian D. Smith is an adjunct professor at Bocconi University in Milan, Italy. He is an academic researcher and author in the field of strategic management. His particular interest, as well as his principal area of research, is the evolution of business models and competitive strategies in the life-sciences sector including pharmaceuticals and medical technology. He also served as editor of the *Journal of Medical Marketing*. Paulo Moreira is a professor at Porto Lusiada University in Portugal. He is also Director for Europe for Princeton HealthCare International. His areas of expertise are health promotion, evidence-based medicine, healthcare management, health education and promotion, and public health education. Mickey C. Smith is a highly acclaimed researcher and writer in the field of pharmaceutical marketing. Mickey Smith is a professor at the University of Mississippi with a particular research interest in pharmaceutical marketing and patient care. He has published over 350 articles in over 100 different research and professional journals.

Table 5 presents a listing of highly influential authors based on total and fractional citations. Total citations are the overall citations of all the articles authored by an individual. In order to account for multiple co-authors within the same study, we have calculated the fractional citations. These results are different from total citations. The total citations of each article are divided by the number of co-authors in order to compute the number

Table 4. Most prolific authors by total and adjusted appearance.

N	Author	Total appearance (TA)	Rank TA	Adjusted appearance (AA)	Rank AA
1	Smith, Brian D.	13	1	9.87	1
2	Moreira, Paulo	8	10	5.83	2
3	Smith, Mickey C.	8	10	5.67	3
4	Moore, Stephen T.	6	22	5.50	4
5	Moser, H. R.	9	6	5.33	5
6	Winston, William J.	6	22	5.33	5
7	Tipton, David	6	22	5.33	5
8	Self, Donald R.	12	2	5.08	8
9	Sanchez, Peter M.	5	35	5.00	9
10	Paul III, David P.	8	10	4.58	10
11	Savopoulos, John	7	13	4.50	11
12	Schmitt, Joachim M.	5	35	4.50	11
13	Smith, Alan D.	5	35	4.50	11
14	Goldman, Robert L.	7	13	4.42	14
15	Lerer, Leonard	5	35	4.33	15
16	Tootelian, Dennis H.	9	6	4.25	16
17	Mukherjee, Avinandan	7	13	4.17	17
18	Strutton, David	9	6	4.00	18
19	Moss, Giles D.	5	35	4.00	18
20	Davis, Joel J.	5	35	4.00	18
21	Loudon, David L.	12	2	3.83	21
22	Busbin, James W.	6	22	3.83	21
23	Crane, F. G.	5	35	3.83	21
24	White, Lesley	9	6	3.58	24
25	Stevens, Robert E.	11	4	3.53	25
26	Huang, Edgar	7	13	3.50	26
27	Bojakowski, Steve	4	43	3.50	26
28	Bates, Andree	5	35	3.17	28
29	Chandra, Ashish	7	13	3.00	29
30	Isouard, G.	6	22	3.00	29
31	Martins, J. M.	6	22	3.00	29
32	Lee, Doohee	7	13	2.87	32
33	Pinto, Mary Beth	6	22	2.83	33
34	Rivers, P. A.	7	13	2.75	34
35	Hassali, Mohamed Azmi	11	4	2.67	35
36	Rundle-Thiele, Sharyn	6	22	2.33	36
37	Spake, Deborah F.	6	22	2.17	37
38	Khanfar, Nile M.	7	13	1.92	38
39	Deshpande, Sameer	6	22	1.73	39
40	Fottler, Myron D.	6	22	1.62	40
41	Moskowitz, Howard R.	6	22	1.57	41
42	Gombeski Jr., William R.	7	13	1.43	42
43	Saleem, Fahad	6	22	1.30	43

Note: Authors ranked 1 to 10 are highlighted with bold. Cut-off point is total appearance of 6 and/or adjusted appearance of 3.

of fractional citations as follows:

$$\text{Fractional Citations} = \text{Total Citations} \div \text{Number of Authors}$$

Based on total citations, the most influential authors are Sameer Deshpande, Michael D. Basil, and Debra Z. Basil. However, the top authors based on fractional citations are Philip J. Brown, Alison M. Dean, and X. M. Huang.

There is a limitation to ranking based on total and fractional citations. The earlier papers tend to receive more citations than the more recent ones. In order to adjust for this discrepancy, we calculated the average

Table 5. Highly influential authors by total and fractional citations.

N	Author	Total appearance	Total citations (TC)	Rank TC	Fractional citations (FC)	Rank FC
1	Brown, Philip J.	1	155	6	155.00	1
2	Dean, Alison M.	1	141	9	141.00	2
3	Huang, X. M.	1	119	27	119.00	3
4	Campbell, Margaret C.	1	111	35	111.00	4
5	Smith, Brian D.	13	124	19	104.07	5
6	Smith, Alan D.	5	117	30	99.00	6
7	Chilingerian, J. A.	1	185	4	92.50	7
8	Sherman, H. D.	1	185	4	92.50	7
9	Moss, Giles D.	5	115	33	92.00	9
10	Deshpande, Sameer	6	271	1	85.72	10
11	Lerer, Leonard	5	101	45	76.33	11
12	Fleury, Marie-Josée	2	85	49	75.00	12
13	Dutta, Mohan Jyoti	2	148	7	74.00	13
14	Basil, Michael D.	2	225	2	68.56	14
15	Bodie, Graham D.	1	137	12	68.50	15
16	Basil, Debra Z.	1	196	3	65.33	16
17	Pinto, Mary Beth	6	137	12	65.33	16
18	Caputo, Richard K.	2	130	17	65.00	18
19	Dolinsky, Arthur L.	2	130	17	65.00	18
20	Kaldenberg, Dennis	3	90	48	63.50	20
21	Soliman, Ahmed A.	1	63	50	63.00	21
22	Jayanti, Rama	2	62	52	62.00	22
23	Aagja, Jayesh P.	1	116	31	58.00	23
24	Garg, Renuka	1	116	31	58.00	23
25	Lega, Federico	3	57	53	57.00	25
26	Caruana, A.	1	110	36	55.00	26
27	Fenech, N.	1	110	36	55.00	26
28	Mukherjee, Avinandan	7	123	20	53.67	28
29	Peltier, James W.	5	144	8	53.00	29
30	Hamlin, R. G.	1	53	54	53.00	29
31	Huang, Edgar	7	104	43	51.50	31
32	Crane, F. G.	5	63	50	51.17	32
33	Dutta-Bergman, Mohar	1	51	55	51.00	33
34	Cangelosi Jr., Joseph D.	3	138	10	49.67	34
35	Markham, F. S.	3	138	10	49.67	34
36	Degeling, P.	2	136	14	44.92	36
37	Hill, M.	1	131	15	43.67	37
38	Kennedy, J.	1	131	15	43.67	37
39	Schibrowsky, John A.	2	109	38	36.33	39
40	Tengilmoglu, Dilaver	5	120	26	36.17	40
41	Huh, Jisu	4	118	29	36.08	41
42	Reid, Leonard N.	4	119	27	35.38	42
43	Eveland, A. P.	1	105	39	35.00	43
44	Tay, Richard	1	105	39	35.00	43
45	Watson, Barry	1	105	39	35.00	43
46	DeLorme, Denise E.	3	115	33	34.58	46
47	Khanfar, Nile M.	7	103	44	29.50	47
48	Perri III, Matthew	3	100	47	27.83	48
49	Fottler, Myron D.	6	105	39	26.75	49
50	Bresnen, Mike	1	123	20	24.60	50
51	Edelman, Linda	1	123	20	24.60	50
52	Newell, Sue	1	123	20	24.60	50
53	Scarbrough, Harry	1	123	20	24.60	50
54	Swan, Jacky	1	123	20	24.60	50
55	Lerer, Leonard	5	101	45	22.50	55

Note: Authors ranked 1 to 10 are highlighted with bold. Cut-off point is total citations of 100 and/or fractional citations of 50.

fractional citations per year and set out these values in Table 6. To compute the average fractional citations, the fractional citations for each article are divided by the number of years since the article was published.

Table 6. Highly influential authors by average fractional citations.

N	Author	Total appearance	Average fractional citation per year
1	Brown , Philip J.	1	10.33
2	Garg, Renuka	1	8.29
3	Aagja, Jayesh P.	1	8.29
4	Basil, Debra Z.	1	8.17
5	Dean, Alison M.	1	7.83
6	Bodie, Graham D.	1	7.61
7	Campbell, Margaret C.	1	7.40
8	Nussbaum, Alexander K.	1	6.13
9	Hackworth, Brittany A.	1	5.50
10	Kunz, Michelle B.	1	5.50
11	Huang, X. M.	1	5.17
12	McGoldrick, Peter J.	1	5.00
13	Harrison, Anthony	1	5.00
14	Fortenberry Jr., John L.	1	5.00
15	Vequist, David G.	1	4.83
16	Guiry, Michael	1	4.83
17	Dunbar, Christina L.	1	4.75
18	Fenech, N.	1	4.58
19	Caruana, A.	1	4.58
20	Kreps, Gary L.	1	4.56
21	Ozcan, Yasar	1	4.50
22	Highfill, Tina	1	4.50
23	Esteban, Diego	1	4.33
24	Basil, Michael D.	2	4.22
25	Zarenezhad, Forouzandeh	1	4.17
26	Ghatari, Ali Rajabzadeh	1	4.17
27	Mehrjerdi, Yahia Zare	1	4.14
28	Dutta, Mohan Jyoti	2	4.11
29	von, Thiele Schwarz	1	4.00
30	Perrault, Evan K.	1	4.00
31	Osei-Frimpong, Kofi	1	4.00
32	Naranjo-Gil, David	1	4.00

Note: Cut-off point is average fractional citations of 4 or above.

Average Fractional Citations per Year

$$= \text{Fractional Citations} \div \text{Number of Years since Publication}$$

According to these calculations, the most influential authors are Philip J. Brown, Renuka Garg, and Jayesh P. Aagja. Philip J. Brown is a professor emeritus at the University of Kent in Canterbury, UK. His areas of expertise are comprised of statistics, regression analysis, multivariate statistics, multiple regression, and Bayesian and mixed models. Renuka Garg is a professor at Veer Narmad South Gujarat University in India. She is Head of the Department of Business and Industrial Management with expertise in marketing management, strategic marketing, customer satisfaction, service marketing, customer relationship management, and service quality. Jayesh P. Aagja is a professor at the Institute of Management, Nirma University, Ahmedabad, India. He holds an MBA (marketing) and a PhD from Veer Narmad South Gujarat University, Surat. He has over 16 years of experience in management teaching. His research interests include understanding the impact of individual- and group-level factors on buying

behavior, contagion marketing and the influence of social networking, customer-experience management, sales management, and marketing channel management.

Interestingly, all of the influential authors with a relatively high number of average citations per year have only one article to their credit. Thus, we can safely conclude that a greater number of appearances/publications does not necessarily translate into more citations.

Most influential articles

For the most influential articles, we have considered articles with four or more citations. This narrowed down our dataset to 119 articles. Most of these articles, from B-ranked and non-listed journals are empirical based on quantitative data.

Based on the number of citations per year, the most influential articles are “Factors Influencing Healthy Eating Habits Among College Students: An Application of the Health Belief Model” published in *Health Marketing Quarterly*, “Measuring perceived service quality for public hospitals (PubHosQual) in the Indian context” published in the *International Journal of Pharmaceutical & Healthcare Marketing*, and “Understanding Health Literacy for Strategic Health Marketing: eHealth Literacy, Health Disparities, and the Digital Divide” published in *Health Marketing Quarterly*.

In “Factors Influencing Healthy Eating Habits among College Students: An Application of the Health Belief Model,” the implications of poor eating habits on health and economic performance are discussed. Deshpande, Basil, and Basil (2009) studied the phenomenon of food selection and applied the health belief mode to predict the likelihood of healthy eating among university students. The technique used to test the health belief model (HBM) was structural equation modelling. Gender-based and social-change analyses were also implemented.

In the second influential article, Aagja and Garg (2010) undertook to measure the perceived service quality of public hospitals. A valid and reliable scale, called public hospital service quality (PubHosQual), was developed in order to measure the perceived service quality of public hospitals from the perspective of patients. This model measures the five dimensions of hospital service quality: admission, medical service, overall service, the discharge process, and social responsibility.

The third influential article is entitled “Understanding Health Literacy for Strategic Health Marketing: eHealth Literacy, Health Disparities, and the Digital Divide.” In this study, Bodie and Dutta (2008) incorporated health literacy into the Integrative Model of eHealth Use. They proposed that macro-level disparities in social structures are connected with health

disparities through the micro-level conduits of eHealth literacy, motivation, and ability.

An interesting observation is that the articles published in *Health Marketing Quarterly* are the most influential. This observation is very different from the previous results in which this journal was ranked fifth among its peers. This is clearly the best aspect of citation analysis. This approach is focused on the article itself instead of on the journal. While the various publications rank in a different order every year, it is the actual articles that communicate the research.

The overall result from these influential articles can be stated as follows: even though the level of interest in medical research in general and in pharmaceutical research, in particular, has waned, OTC drug markets and advertising spending have not. Advertising remains a prominent OTC drug-purchase and consumption driver, likely spurred on by the popularity of self-medication and Rx-to-OTC drug switching.

Discussion, conclusion, and limitations

There is no integrative systematic literature review based on citation analysis that can be used to determine the most influential authors, journals, and articles in the field of healthcare marketing. Therefore, the aim of this study is to identify the quantity and quality of this literature based on a citation-analysis approach. This study performed a citation analysis of 1,950 articles published over 30 years in 11 journals. To the best of our knowledge, this study's sample synthesized thus far the largest sample of articles on healthcare marketing. *Health Marketing Quarterly*, the *Journal of Medical Marketing*, and *Health Services Management Research* are the most prolific journals. On the other hand, the *International Journal of Pharmaceutical & Healthcare Marketing*, the *International Journal of Healthcare Management*, and the *Academy of Health Care Management Journal* are the most influential journals on the basis of citations per year. Thus, most prolific and the most highly cited journals are not the same. Individually, highly cited articles primarily originate from the most prolific journals such as *Health Marketing Quarterly*, the *International Journal of Pharmaceutical & Healthcare Marketing*, *Health Services Management Research*, and the *International Journal of Healthcare Management*. The most prolific journal, *Health Marketing Quarterly*, has become less dominant in recent times while the *Journal of Medical Marketing* has become more active.

Overall, two-researcher teams have authored most of the articles. However, both single- and two-authored articles have been in steady decline whereas three- and four-authored articles are on the rise. This signals more collaboration and specialization by authors.

Brian D. Smith, David L. Loudon, Donald R. Self, and Mohamed Azmi Hassali are the most prolific authors based on total appearance while Brian D. Smith, Mickey C. Smith, Paulo Moreira, and Stephen T. Moore are the most prolific authors based on adjusted appearance. Thus, Brian D. Smith is number one based on total and adjusted appearance. In terms of total citations, the most influential authors are Sameer Deshpande, Michael D. Basil, and Debra Z. Basil. However, the top authors based on fractional citations are Philip J. Brown, Alison M. Dean, and X. M. Huang. The most influential authors based on citations per year are Philip J. Brown, Renuka Garg, and Jayesh P. Aagja. Most of the highly influential authors have published only one paper. Most of the highly cited articles were published in *Health Marketing Quarterly*, the *International Journal of Pharmaceutical & Healthcare Marketing*, and *Health Services Management Research*. Interestingly, more than 90% of highly cited articles were published in the last 15 years, between 2002 and 2016.

This paper identifies the most prolific and highly cited journals and authors, and thus it provides a broad overview of the field and guidance to potential researchers in the same. It was also found that teamwork and collaboration are needed in order to publish in high-quality journals. Potential researchers can select appropriate journals to disseminate their work and can identify opportunities to pursue collaborative work. Further, potential graduate students can approach established scholars for supervision of their research. The scope of this study was limited to only 11 journals. Future studies can pursue articles published in other journals as well.

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