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# A Bibliometric Analysis of Peer-Reviewed Journal Publications by **British Occupational Therapy Authors**

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# A Bibliometric Analysis of Peer-Reviewed Journal Publications by British Occupational Therapy Authors

#### **Abstract**

*Background:* A bibliometric analysis was completed of the peer-reviewed literature from 1991 to 2015 written by British occupational therapy authors that was indexed in the Science Citation Index-Expanded (SCI-Expanded) or Social Sciences Citation Index (SSCI) databases.

*Methods:* "Occupational therapy" and "occupational therapist" were used as keywords to search journal articles' publication title, abstract, author details, keywords, and *KeyWords Plus*. One of the authors had to be identified as a qualified occupational therapist with a British affiliation.

Results: From 1991 to 2015, 680 journal articles were published by British occupational therapy authors. The top three journals in which authors published were the *British Journal of Occupational Therapy, Clinical Rehabilitation*, and *Disability and Rehabilitation*. The five institutions that generated the largest number of occupational therapy articles were the University of Nottingham, Brunel University London, University of Southampton, Queen Margaret University, and the University of East Anglia. British authors often collaborated in the writing of manuscripts with other authors from Australia, the United States, Canada, and Sweden.

Conclusion: The quantity of occupational therapy peer-reviewed literature written by British authors has increased over the last 2 decades. British authors have made and continue to make noteworthy contributions to the profession's body of refereed knowledge at the national and international levels.

# Keywords

journals, publications, authors, bibliometric, SCI-Expanded, SSCI

### Credentials Display

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With the launch of electronic access to journals in the late 1990s, a new method of quantifying the publication performance and impact of journals, articles, books, authors, institutions, and countries has arisen known as *bibliometrics* (Meho & Yang, 2007). According to Bellis (2009), bibliometrics are a set of methods used to quantitatively analyze scientific, technological, and professional literature. More specifically, bibliometrics are "the application of quantitative analysis and statistics to publications such as journal articles and their accompanying citation counts" (Thomson Reuters, 2008, p. 3). The Organization for Economic Cooperation and Development (OECD) (2002) states that bibliometric analyses "use data on numbers and authors of scientific publications and on articles and the citations therein (and in patents) to measure the 'output' of individuals/research teams, institutions, and countries, to identify national and international networks, and to map the development of new (multi-disciplinary) fields of science and technology" (p. 203). The purpose of this paper is to generate a landscape overview of the journal article publication trends of British occupational therapy authors using a bibliometric approach.

Citation analysis and content analysis and are two commonly used bibliometric analytic methods (Bellis, 2009). Citation analysis examines how scholars cite one another in different types of publications (including books and journal articles) and identifies links between authors, journals, scholarly works, countries, and different fields of study. Content analysis is a set of analytic approaches used to understand the contents of journals, books, and other scholarly works to establish links and patterns or to determine how specific issues are presented.

Using data accessed from electronic databases, bibliometric analysis can generate information about a profession's publication trends, including key authors in specific topic areas, the institutions linked with high impact publications, and the journals in which a profession's authors frequently publish. This can generate an overview of the publication landscape of specialized knowledge related to a profession or, more specifically, a country where a discipline is recognized. Bibliometric data is increasingly used for promotion; research grant awards; tenure review; performance appraisal; and department, school, and faculty benchmarking purposes (Brown, 2012). Given the increasing frequency of use of bibliometric data in making decisions related to career progression, resource allocation, and research grant funding, examining the bibliometric profile of British occupational therapy authors is warranted.

The most widely referred to publication metric applied to peer-reviewed journals is the Impact Factor (IF). IFs are published yearly for journals indexed in Thomson Reuter's Journal Citation Reports (JCR) and refer to the average citation number of papers published in the 2 preceding years; citations must be made by articles published in JCR-indexed journals (Brown, 2011). IFs are frequently used as an index for the relative stature of a journal in its field; journals with higher IFs are deemed to be more significant and prestigious than those with lower IFs (Brown, 2012; Gutman, 2010).

Specialized knowledge, autonomy, authority, and altruism are often viewed as the significant features of a recognized profession (Hodson & Sullivan, 2012). Specialized knowledge is published in the format of books, journals, theses, and conference proceedings. The hallmark of a journal involves peer-review, editorial board membership of recognized experts, and a tradition of accepting high-quality manuscripts. Journals are often published by professional bodies (e.g., The Canadian Association of Occupational Therapists, The College of Occupational Therapists/British Association of Occupational Therapists, The New Zealand Association of Occupational Therapy, first published in 1922 by the

American Occupational Therapy Association (AOTA). The journal's name was changed in 1925 to *Occupational Therapy and Rehabilitation* (Hopkins, 1983), and then to the *American Journal of Occupational Therapy* (AJOT) in 1947.

Other refereed occupational therapy journals with long histories of publication are the *Canadian* Journal of Occupational Therapy (CJOT), 1933-present; the British Journal of Occupational Therapy (BJOT), 1938-present; the Australian Occupational Therapy Journal (AOTJ), 1952-present; the New Zealand Journal of Occupational Therapy (NZJOT), 1953-present; and the South African Journal of Occupational Therapy (SAJOT), 1970-present. There are a number of other peer-reviewed occupational therapy journals that are published in English: the Scandinavian Journal of Occupational Therapy (SJOT), the Occupational Therapy Journal of Research (OTJR), the Open Journal of Occupational Therapy (OJOT), Physical and Occupational Therapy in Pediatrics (POTP), Occupational Therapy in Health Care (OTHC), Occupational Therapy International (OTI), Occupational Therapy in Mental Health (OTMH), Physical and Occupational Therapy in Geriatrics (POTG), the Irish Journal of Occupational Therapy (IJOT), the Hong Kong Journal of Occupational Therapy (HKJOT), the Philippine Journal of Occupational Therapy (PJOT), the Asian Journal of Occupational Therapy (AsJOT), the *Indian Journal of Occupational Therapy* (InJOT), and the *World Federation of* Occupational Therapists Bulletin (WFOT Bulletin). Occupational therapy authors publish in disciplinespecific journals like those listed above as well as in a number of related journals, including the American Journal of Physical Medicine and Rehabilitation, the Archives of Physical Medicine and Rehabilitation, the Journal of Rehabilitation Medicine, the International Journal of Therapy and Rehabilitation, Developmental Medicine and Child Neurology, Clinical Rehabilitation, Disability and Rehabilitation, the Journal of Head Injury Rehabilitation, Developmental Neurorehabilitation, Topics in Stroke Rehabilitation, the Journal of Intellectual Disability Research, the Psychiatric Rehabilitation Journal, the Journal of Hand Therapy, the Journal of Vocational Rehabilitation, and the Journal of Allied Health.

British occupational therapy authors have made a noteworthy contribution to the profession's body of cognate knowledge over the past 8 decades. The Association of Occupational Therapists (the original name of the British Association for Occupational Therapists) was first formed in 1936, while the Scottish Association of Occupational Therapists was founded in 1932 (Patterson, 2010). In 1969, a referendum was held to merge the two professional associations, resulting in the 1974 establishment of the British Association of Occupational Therapists (BAOT) (Wilcock, 2002). The initial version of the current-day BJOT was first published monthly beginning in 1938 and was titled *Occupational Therapy*. "The *British Journal of Occupational Therapy* metamorphosed from the monthly *Occupational Therapy* and the quarterly *Scottish Journal of Occupational Therapy*" (p. 343). The BJOT's first issue appeared in May 1974. In 1978 it became the official publication of the College of Occupational Therapists rather than the BAOT.

Several studies have examined the subject contents of BJOT and other occupational therapy literature. Ziviani, Behan, and Rodger (1984) completed a comparison review of the content, format, and authors of articles published in the BJOT, AJOT, and AOTJ from 1970 to 1982. The authors reviewed 1,746 articles, including 252 from AOTJ, 507 from BJOT, and 987 from AJOT. According to Ziviani et al., BJOT published primarily descriptive articles (83.6%) and its contents focused mainly on physical, professional, pediatric, mental health, sensory integration, and community practice issues. Just over half of the BJOT articles were written by practitioners (55.2%) and just over three-quarters were

scripted by sole authors (76.5%). Ziviani et al. noted that "clinicians, who compromise the majority of the occupational therapy workforce, are obviously contributing substantially to the journal literature. This could be considered surprising on one hand given that most occupational therapy clinicians have limited time and resources for these pursuits...their dedication is not to be questioned" (p. 9). It was also reported that when the two 5-year time periods of 1970-1975 and 1976-1980 were compared, the percentage of literature categorized as research published in the BJOT increased from 8% to 11.4%, respectively.

Mountain (1997) completed a content analysis of articles published in the BJOT over an 8-year period from 1989 to 1996. Mountain reviewed and classified 569 manuscripts. The top four subject areas covered by the BJOT during that time span were clinical work (e.g., physical disabilities, adult mental health, geriatrics, pediatrics) (38.8%, n = 231); topics associated with clinical work (e.g., assessment and theory that underpinned clinical work) (19.7%, n = 112); policy and policy implementation (12.3%, n = 70); and education, recruitment, and retention (11.6%, n = 66). The top two BJOT journal article publication types from 1989 to 1996 were research (37.6%, n = 214) and descriptive papers (43.9%, n = 250). The greatest number of research articles focused on clinical work (n = 99) and descriptive studies (n = 108). "These results suggest that [British] occupational therapists are developing a research base" (p. 430).

Pearl, Brennan, Journey, Antill, and McPherson (2014) completed a content analysis of the articles published in five occupational therapy journals (AJOT, BJOT, AOTJ, CJOT, and SJOT) to generate a profile of the discipline-specific literature base from 2006 to 2010. "AJOT and SJOT had the highest percentage of articles focusing on physical disabilities, whereas a majority of articles in AOTJ, BJOT, and CJOT focused on education....the majority of the research articles were descriptive for all journals" (p. e115). The topic focus of the BJOT articles published from 2006 to 2010 covered a range of areas, including education (40%), mental health (16%), community practice (15%), physical disabilities (12%), and pediatrics (10%). "BJOT published the highest percentage of descriptive research (56%). The high prevalence of descriptive studies was followed by systematic reviews (14%), and instrument development research and quasi-experimental research (both at 8%)" (p. e120).

Roberts (1992) compared the citation coverage of occupational therapy literature in four bibliographic information services for the year 1989: *Index Medicus*, *Excerpta Medica*, *Cumulative Index to Nursing and Allied Health Literature* (CINAHL) and *Occupational Therapy Index* (OTI). "The published lists of journals indexed for 1989 for each of the four bibliographic services were examined" (p. 144). The journals selected for inclusion in Robert's review were AJOT, BJOT, OTJR, CJOT, OTMH, OTHC, and AOTJ. The number of citations received by the following occupational therapy journals in 1989 were: AJOT, n = 656; BJOT, n = 79; OTJR, n = 76; CJOT, n = 61; OTMH, n = 53; OTHC, n = 37; POTP, n = 37; and AOTJ, n = 22. By far, the AJOT had the largest number of citations with BJOT receiving the second highest number. This is likely due to at least two factors: AJOT published the largest number of articles per annum and was listed in all four electronic databases from which bibliometric information was extracted.

Reed (1988) obtained similar results in a citation analysis of occupational therapy literature covered on three electronic databases (MEDLINE, CINAHL, and PsycINFO). The top five occupational therapy journals receiving the largest number of citations in 1988 were AJOT, n = 1425; OTJR, n = 128; CJOT, n = 68; BJOT, n = 49; and OTHC, n = 38. More recently, Potter (2010) replicated Reed's methodology and determined that the occupational therapy-specific journals that

received the largest number of citations during the year 2007 in the same three electronic databases were: AJOT, n = 1235; OTJR, n = 199; CJOT, n = 197; BJOT, n = 143; OTI, n = 86; and AOTJ, n = 82. Potter noted that the AJOT "has been a dominant force in the literature for many years but is beginning to give ground to newer journals and journals outside the United States" (p. 235).

Rodger, McKenna, and Brown (2007) examined the perceived quality and impact of occupational therapy journals based on the perspectives of the authors published in them. The authors of articles published in 18 peer-reviewed English-language occupational therapy journals between January 2003 and June 2005 were invited to complete an online survey. Rodger et al. contacted 544 authors and 184 (33%) completed the survey. "Six journals were rated high by respondents across most the quality indicators": AJOT, AOTJ, BJOT, CJOT, OTJR, and SJOT (p. 174). The mean global quality ratings for these six occupational therapy journals out of 10 were 7.4, 6.9, 7.0, 7.2, 7.0, and 7.0, respectively. BJOT received the third highest mean global rating, similar to OTJR and the SJOT.

The intent of this article is to present the results of a bibliometric analysis of British occupational therapy authors, including identification of the number of journal articles published, the topic areas most frequently addressed in publications, publications of highest citation and impact, journals in which British authors most frequently published, institutions that generated large volumes of occupational therapy literature, and countries of authors with whom British authors often collaborated.

#### Method

# The Science Citation Index-Expanded and The Social Science Citation Index

Data were obtained from the online versions of the Science Citation Index-Expanded (SCI-Expanded) and the Social Science Citation Index (SSCI) databases of the Thomson Reuters' Web of Science Core Collection (WSCC) (June 20, 2016 updated version). The Journal Citation Reports (JCR) of 2015 indexes 11,990 journals, including 8,778 journals in 176 WSCC categories in the SCI-Expanded and 3,212 journals in 57 WSCC categories in the SSCI, respectively. Search Terms

"Occupational therapy" and "occupational therapist(s)" were used as keywords to search journal articles' publication title, abstract, author details, keywords, and KeyWords Plus. KeyWords Plus supplied additional search terms extracted from article titles listed as references and substantially augmented title word and author keyword indexing (Garfield, 1990). Only journal articles published from 1991 through 2015 were included in the search.

We found 5,687 documents. Another filter, referred to as "front page" was used (Fu, Wang, & Ho, 2012). The "front page" filter system only searches for keywords on front pages, including article title, abstract, and author keywords. The final filter was geographical location and identified journal articles published by British authors by the affiliation of at least one journal article author. One journal article author also had to be identified as a qualified occupational therapist with a British affiliation (e.g., England, Scotland, Northern Ireland, or Wales).

### **Citation Count**

Full records were downloaded to Microsoft Excel 2013 and additional coding was manually performed (Li & Ho, 2008). The only document type analyzed was journal articles. IF ( $IF_{2015}$ ) were taken from the JCR 2015. The total number of times an article was cited in the WSCC from its initial date of publication until the end of 2015 was recorded as  $TC_{2015}$  (Ho & Ho, 2015).  $C_{2015}$ , the total citations per journal article accrued in 2015 only, was also applied (Ho, 2012). The advantage of the

 $TC_{year}$  and  $C_{year}$  is that they are invariable and ensure repeatability compared with the citation index from the WSCC (Fu et al., 2012).

# **Authorship of Articles**

In the WSCC database, the corresponding author was designated as the "reprint author"; we instead used the term "corresponding author" (Ho, 2012). In a single author article in which authorship was unspecified, the single author was designated as both first and corresponding author. For a single institution article, the institution was classified as the first and corresponding authors' institution (Ho, 2013). Contributions of different institutions and countries were estimated by the affiliation of at least one article author.

# **Collaboration Type**

Collaboration type was determined by author affiliations and addresses (Ho, 2007), where the term "single country article" was designated if the researchers' addresses were from the same country. The term "internationally collaborative article" was assigned to those articles that were coauthored by individuals from multiple countries. The term "single institution article" was assigned if the researchers' addresses were from the same institution. The term "inter-institutionally collaborative article" was assigned if authors were from different institutions (Li & Ho, 2008).

#### **Results**

# **Publication Outputs**

The number of publication outputs generated by British occupational therapy authors during the 1991-2015 period that were listed in the SCI-Expanded or the SSCI was 680 journal articles. The number of publications authored by British occupational therapists on an annual basis gradually increased from five in 1991 to 77 in 2014. After 2010, there was a marked increase in the number of articles published by British occupational therapy authors with a peak reached in 2014 (see Table 1).

**Table 1**Number of Articles Included in the SCI-Expanded and the SSCI Databases from 1991 to 2015 Authored by British Occupational Therapists

Year	TP	AU	AU/TP	NR	NR/TP	PG	PG/TP
1991	5	17	3.4	115	23	47	9.4
1992	3	3	1.0	24	8.0	42	14
1993	8	30	3.8	170	21	64	8.0
1994	11	25	2.3	255	23	102	9.3
1995	5	11	2.2	115	23	31	6.2
1996	15	46	3.1	284	19	98	6.5
1997	14	52	3.7	374	27	110	7.9
1998	14	43	3.1	303	22	116	8.3
1999	10	43	4.3	296	30	83	8.3
2000	20	69	3.5	401	20	134	6.7
2001	18	77	4.3	413	23	136	7.6
2002	11	39	3.5	302	27	83	7.5
2003	17	59	3.5	485	29	140	8.2
2004	19	80	4.2	612	32	177	9.3

2005	19	68	3.6	570	30	164	8.6
2006	21	117	5.6	802	38	215	10
2007	31	152	4.9	1199	39	295	9.5
2008	22	82	3.7	734	33	202	9.2
2009	37	127	3.4	1254	34	303	8.2
2010	63	229	3.6	2275	36	529	8.4
2011	48	178	3.7	1859	39	394	8.2
2012	64	310	4.8	2253	35	539	8.4
2013	61	265	4.3	2014	33	498	8.2
2014	77	328	4.3	2580	34	643	8.4
2015	67	286	4.3	2552	38	630	9.4
Total	680	2736		22241		5775	
Average			4.0		33		8.5

*Note*. TP = total number of articles; AU = number of authors; NR = number of reference cited; PG = page count.

Each journal article had on average four authors and 33 references with a mean length of 8.5 pages. The mean number of British occupational therapy authors per manuscript ranged from 1.0 to 5.6 between 1991 and 2015, with the number gradually increasing starting in 2004 onward (see Table 1). The average length of manuscript ranged from six to 10 pages with the majority of manuscripts being eight to nine pages. For the past 2 decades, the mean number of references per manuscript written by British occupational therapy authors ranged from eight to 39; however, post 2006 this number ranged from 33 to 39 (see Table 1).

# Citation Rates of Journal Articles Written by British Occupational Therapists

The total number of times an article was cited in another journal article indexed in the WSCC from its initial publication date until the end of 2015 was reported as  $TC_{2015}$ . The journal articles authored by British occupational therapists with the highest number of total citations (with a  $TC_{2015} > 200$ ) from 1991 to 2015 were: (a) Close et al. (1999), with a  $TC_{2015} = 474$ ; (b) Andrews, Murphy, Munday, and Littlewood (1996), with a  $TC_{2015} = 371$ ; (c) Langhorne, Bernhardt, and Kwakkel (2011), with a  $TC_{2015} = 228$ ; and (d) Wykes et al. (1999), with a  $TC_{2015} = 216$ . Close et al. (1999) and Langhorne et al. (2011) were both published in *The Lancet*.

Three of the four articles were published in the 1990s, with only the Langhorne et al. article (2011) published post-2000. Three of the articles by British occupational therapy authors (Andrews, Murphy, Munday, and Littlewood, 1996; Close et al., 1999; Langhorne et al., 2011) dealt with physical rehabilitation issues, whereas only one article (Wykes et al., 1999) dealt with mental health. All four of the articles focused on adult-related health issues with no  $TC_{2015} > 200$  articles reporting research findings about pediatric health topics. None of the journals in which the  $TC_{2015} > 100$  articles were published were occupational therapy-specific journals, such as the AOTJ, CJOT, AJOT, or BJOT.

The journal articles by British occupational therapists with the highest citation totals in 2015 alone ( $C_{2015} > 15$ ) in the WSCC were: (a) Langhorne et al. (2011), with a  $C_{2015} = 71$ ; (b) Andrews et al. (1996), with a  $C_{2015} = 34$ ; (c) Higginson et al. (2014), with a  $C_{2015} = 21$ ; (d) Close et al. (1999), with a  $C_{2015} = 17$ ; and (e) Jackson et al. (2012), with a  $C_{2015} = 16$ . None of the five journal articles with a  $C_{2015} = 16$ .

> 15 were published in occupational therapy-specific periodicals. Three of the five articles (Close et al., 1999; Higginson et al., 2014; Langhorne et al., 2011) with a  $C_{2015}$  > 15 were published in *The Lancet* or related journals. Two of the five articles with a  $C_{2015}$  > 15 were published in the 1990s (Andrews et al., 1996; Close et al., 1999) and the remaining three were published post-2000 (Higginson et al., 2014; Jackson et al., 2012; Langhorne et al., 2011). Two of the articles with a  $C_{2015}$  > 15 used a randomized controlled trial design (Close et al., 1999; Higginson et al., 2014). Four of the articles focused on older adult-related health issues with only one article with a  $C_{2015}$  > 15 reporting the findings of a systematic review on a health topic relevant to young people (Jackson et al., 2012).

# The Web of Science Core Collection (WSCC) Subject Categories and Journals

Based on the classification of subject categories in the JCR 2015, the publication output data for British occupational therapy authors was distributed across 16 WSCC categories in the SCI-Expanded and the SSCI. The top WSCC subject category was rehabilitation for 65 journals in the SCI-Expanded and 71 journals in the SSCI. The rehabilitation category included 348 of the designated articles authored by British occupational therapists from 1991 to 2015. In other words, 51% of the 680 British occupational therapy authored articles fell into the WSCC rehabilitation category. The second most frequent WSCC category was health care sciences and services with 58 articles (8.5%) in the SCI-Expanded.

The third most common category was clinical neurology with 42 articles (6.2%), while the fourth highest subject category allocated to articles by British occupational therapy authors was psychiatry with 40 articles (5.9%). The next two subject categories were general and internal medicine and nursing, both with 37 articles (5.4% each). The next top three WSCC subject categories were rheumatology with 28 articles (4.1%) and geriatrics and gerontology and public environmental and occupational health each with 26 articles (3.8% each). The WSCC categories of rehabilitation (65 journals in the SCI-Expanded, 71 journals in the SSCI), psychiatry (140, 136), nursing (116, 114), and public environmental and occupational health (172, 153) were subject categories included in both the SCI-Expanded and the SSCI.

British occupational therapists published 680 articles from 1991 to 2015 in a range of different journals. Published articles written by British occupational therapy authors accounted for 46.2% (n = 314) of the total number of articles (see Table 2 for the top 10 journals). The top journal that published the largest number of articles written by British occupational therapy authors was the BJOT (178 articles, 26% of 680 articles). The second and third most common journals in which British authors published did not have occupational therapy in their titles: *Clinical Rehabilitation* (33 articles, 4.9% of 680 articles) and *Disability and Rehabilitation* (24 articles, 3.5% of 680 articles).

The next four most frequent journals in which British occupational therapy authors published were the AOTJ (154 articles, 2.2%), SJOT (14 articles, 2.1%), *Age and Ageing* (12, 1.8%), and AJOT (10 articles, 1.5%). *Child Care Health and Development*, the *Journal of Advanced Nursing*, and *Stroke* also published a number of articles by British authors (10 articles, 1.5%; 9 articles, 1.3%; and 9 articles, 1.3% respectively). As noted above, there was a definite trend for British occupational therapy authors to publish articles in non-discipline-specific journals, including *Clinical Rehabilitation*, *Disability and Rehabilitation*, *Age and Ageing*, *Child Care Health and Development*, the *Journal of Advanced Nursing*, and *Stroke* (see Table 2).

**Table 2**Top 12 peer-reviewed journals listed in the Science Citation Index-Expanded (SCI-Expanded) or the Social Science Citation Index (SSCI) databases from 1991-2015 that have published nine or more articles by British occupational therapy authors

Journal	<i>TP</i> (%)	$IF_{2015}$	Web of Science category
British Journal of Occupational Therapy	178 (26)	0.935	rehabilitation
Clinical Rehabilitation	33 (4.9)	2.403	rehabilitation
Disability and Rehabilitation	24 (3.5)	1.919	rehabilitation
Australian Occupational Therapy Journal	15 (2.2)	1.404	rehabilitation
Scandinavian Journal of Occupational Therapy	14 (2.1)	0.957	rehabilitation
Age and Ageing	12 (1.8)	4.201	geriatrics and gerontology
American Journal of Occupational Therapy	10 (1.5)	1.806	rehabilitation
Child Care Health and Development	10 (1.5)	1.754	dev. psychology, pediatrics
Journal of Advanced Nursing	9 (1.3)	1.917	nursing
Stroke	9 (1.3)	5.787	clinical neurology
			peripheral vascular disease

Note: TP: total number of articles; IF<sub>2015</sub>: Impact Factor for 2015

Journals with the highest  $IF_{2015}$  in which occupational therapy authors published were Stroke ( $IF_{2015} = 5.787$ ), with 9 articles; Age and Ageing ( $IF_{2015} = 4.201$ ), with 12 articles; Clinical Rehabilitation ( $IF_{2015} = 2.403$ ), with 33 articles; and Disability and Rehabilitation ( $IF_{2015} = 1.919$ ), with 24 articles. The top four most frequently cited articles from 1991 to 2015 written by British occupational therapy authors were published in The Lancet (Close et al., 1999; Langhorne et al., 2011) ( $IF_{2015} = 45.217$ ), the British Medical Journal (Andrews et al., 1996) ( $IF_{2015} = 19.967$ ), and Schizophrenia Bulletin (Wykes et al., 1999) ( $IF_{2015} = 8.800$ ). The top four most frequently cited articles in 2015 written by British occupational therapists were published in The Lancet (Close et al., 1999; Langhorne et al., 2011) ( $IF_{2015} = 45.217$ ), the British Medical Journal (Andrews et al., 1996) ( $IF_{2015} = 19.967$ ), The Lancet Respiratory Medicine (Higginson et al., 2014) ( $IF_{2015} = 15.328$ ), and Addiction (Jackson et al., 2012) ( $IF_{2015} = 4.972$ ).

#### **Institutional Publication Performance**

Table 3 reports the top 20 institutions ranked by the number of articles published by British occupational therapy authors. The top 10 ranking institutions that published articles by British occupational therapists were the University of Nottingham (UofN) (51 articles, 7.5% of the total), Brunel University London (BUL) (42 articles, 4.0% of the total), the University of Southampton (UofS) (33 articles; 4.9% of the total), Queen Margaret University (QMU) (28 articles, 4.1% of the total), the University of East Anglia (UofEA) (25 articles, 3.7% of the total), Kings College London (KCL) (24 articles, 3.4% of the total), the University of Manchester (UofM) (23 articles, 3.4% of the total), the University of Ulster (UofU) (22 articles, 3.2% of the total), the University of Birmingham (UofB) (21 articles, 3.1% of the total), and the University of Salford (UofSa) (20 articles, 2.9% of the total) (see Table 3).

UofN in the UK published the most articles (n = 51), including two single institution articles, five internationally collaborative articles, two first authored articles, and two corresponding authored

articles. BUL published the second largest number of journal publications by British occupational therapy authors (n = 42), including two single institution articles, three internationally collaborative articles, one first authored article, and two corresponding authored articles.

**Table 3** *Top 20 British Institutions that had Occupational Therapy Authors Publish Journal Articles Listed in the SCI-Expanded or the SSCI Databases from 1991 to 2015* 

Institution	TP	<i>TPR</i> (%)	IPR (%)	CPR (%)	<i>FPR</i> (%)	RPR (%)
University of Nottingham	51	1 (7.5)	3 (3.1)	1 (9.7)	1 (3.5)	2 (3.4)
Brunel University London	42	2 (6.2)	1 (4.0)	2 (7.3)	2 (3.4)	1 (3.6)
University of Southampton	33	3 (4.9)	1 (4.0)	3 (5.3)	3 (2.5)	3 (2.4)
Queen Margaret University	28	4 (4.1)	4 (2.7)	4 (4.8)	5 (1.8)	3 (2.4)
University of East Anglia	25	5 (3.7)	11 (1.8)	5 (4.6)	4 (2.1)	5 (2.2)
Kings College London	24	6 (3.5)	8 (2.2)	6 (4.2)	5 (1.8)	6 (1.6)
University of Manchester	23	7 (3.4)	4 (2.7)	8 (3.7)	7 (1.6)	6 (1.6)
University of Ulster	22	8 (3.2)	4 (2.7)	9 (3.5)	9 (1.5)	11 (1.3)
University of Birmingham	21	9 (3.1)	14 (1.3)	7 (4.0)	9 (1.5)	6 (1.6)
University of Salford	20	10 (2.9)	4 (2.7)	11 (3.1)	9 (1.5)	10 (1.5)
University College London	17	11 (2.5)	25 (0.89)	10 (3.3)	20 (0.88)	20 (0.9)
University of Brighton	14	12 (2.1)	14 (1.3)	12 (2.4)	12 (1.2)	11 (1.3)
Glasgow Caledonian University	13	13 (1.9)	11 (1.8)	22 (2.0)	14 (1.0)	16 (1.0)
University of Sheffield	13	13 (1.9)	14 (1.3)	14 (2.2)	14 (1.0)	16 (1.0)
Sheffield Hallam University	12	15 (1.8)	25 (0.89)	14 (2.2)	14(1)	14 (1.2)
University of Glasgow	12	15 (1.8)	40 (0.44)	12 (2.4)	36 (0.44)	34 (0.45)
Queen's Medical Centre, Nottingham	11	17 (1.6)	40 (0.44)	14 (2.2)	14 (1.0)	11 (1.3)
University of Aberdeen	11	17 (1.6)	25 (0.89)	22 (2.0)	12 (1.2)	14 (1.2)
University of Leeds	11	17 (1.6)	40 (0.44)	14 (2.2)	46 (0.29)	48 (0.3)
University of Western England	11	17 (1.6)	40 (0.44)	14 (2.2)	7 (1.6)	6 (1.6)

Note. TP = total number of articles; TPR (%) = rank and the percentage of total articles; IPR (%) = rank and the percentage of single institution articles; CPR (%) = rank and the percentage of articles international collaborative articles; FPR (%) = rank and the percentage of first author articles; RPR (%) = rank and the percentage of the corresponding authored articles; and N/A = not available.

#### **International Collaborations**

Table 4 reports the top 10 country affiliations of international collaborators who coauthored articles with British occupational therapy authors that are listed in the SCI-Expanded and the SSCI databases from 1991 to 2015. Australia had the highest number of authors who collaborated with British occupational therapists, with 42 coauthored journal articles, while the United States had the second highest number of coauthored papers with 28. Canada, Sweden, the Netherlands, and Ireland were other countries in which colleagues coauthored journal articles with British authors, with 21, 21, 18, and 14 coauthored papers, respectively.

**Table 4** *Top 10 Country Affiliations of Author Collaborators with British Occupational Therapy Authors who have Published Articles Listed in the SCI-Expanded and the SSCI Databases from 1991 to 2015* 

Country	TP	TP R (%)	CP R (%)	FP R (%)	RP R (%)
Australia	42	1 (6.2)	1 (26)	1 (3.1)	1 (3.6)
<b>United States</b>	28	2 (4.1)	2 (18)	2 (2.5)	2 (2.4)
Canada	21	3 (3.1)	3 (13)	4 (1.2)	4 (1.2)
Sweden	21	3 (3.1)	3 (13)	4 (1.2)	6 (0.90)
Netherlands	18	5 (2.6)	5 (11)	3 (1.6)	3 (1.6)
Ireland	14	6 (2.1)	6 (8.8)	4 (1.2)	5 (1.0)
Switzerland	12	7 (1.8)	7 (7.5)	7 (0.59)	7 (0.60)
Germany	9	8 (1.3)	8 (5.6)	11 (0.29)	10 (0.30)
Belgium	7	9 (1.0)	9 (4.4)	7 (0.59)	7 (0.60)
Spain	6	10 (0.88)	10 (3.8)	9 (0.44)	9 (0.45)

Note. TP = total number of articles; CPR = internationally collaborative articles with Australia rank and the percentage of total articles; FPR = first author articles rank and the percentage of total articles; RPR = corresponding author articles rank and the percentage of total articles; R = R = rank; R = R = r

# **British Occupational Therapy Authors' Publication Performance**

The performance of the British occupational therapy authors who have published at least six articles in journals listed in the SCI-Expanded or the SSCI from 1991 to 2015 are reported in Table 5 in relation to the number of articles published, the number of first author articles published, the number of corresponding author articles published, and the total number of single author articles published. A. Hammond was ranked highest for the total number of articles and the number of first and corresponding author articles published by a British occupational therapy author. M. Morley ranked first for the largest number of single author articles published and second for the number of first and corresponding author articles published. A. Hammond was ranked second for the number of single author articles published. When the affiliations of the 15 authors listed in Table 5 are examined, five of the 15 authors (or 33.3%) were from UofN and two of the authors (or 13%) were from BUL. Several other universities with occupational therapy courses are represented (e.g., QMU, KCL, UofU, UofSa).

**Table 5** *Top 15 British occupational Therapy Authors who have Published at Least Nine Articles in Journals Listed in the SCI-Expanded or the SSCI Databases from 1991 to 2015* 

Author	Affiliation	R (TP)	R (FP)	R (RP)	R (SP)
Hammond, A	University of Salford	1 (22)	1 (9)	1 (9)	2 (3)
Drummond, A	University of Nottingham	2 (16)	5 (4)	7 (4)	10(1)
Forsyth, K	Queen Margaret University	2 (16)	N/A	13 (3)	N/A
Morley, M	South West London and St Georges Mental Health NHS	3 (15)	2 (7)	2 (7)	1 (4)
	Trust				
Walker, MF	University of Nottingham	4 (14)	10 (3)	7 (4)	N/A
Atwal, A	Brunel University London	5 (10)	4 (6)	4 (6)	N/A

Gladman, JRF	University of Nottingham	6 (9)	73 (1)	13 (3)	N/A
Kolehmainen, N	University of Aberdeen	7 (8)	2 (7)	2 (7)	N/A
Bryant, W	University of Essex	8 (7)	23 (2)	13 (3)	10(1)
Harries, P	Brunel University London	8 (7)	5 (4)	5 (5)	N/A
Wolfe, CDA	Kings College London	8 (7)	73 (1)	75 (1)	N/A
Casey, J	University of Ulster	9 (6)	N/A	75 (1)	N/A
Fletcher-Smith, .	J University of Nottingham	9 (6)	10 (3)	13 (3)	N/A
Logan, P	University of Nottingham	9 (6)	N/A	N/A	N/A
Sadlo, G	University of Brighton	9 (6)	N/A	N/A	N/A

*Note.* TP = total number of articles; R = rank; FP = first author articles; RP = corresponding author articles; SP = single author articles; N/A = not available.

#### **Discussion**

# **Publication Outputs**

British occupational therapy authors published 680 articles from 1991 to 2015 that were listed in the SCI-Expanded or the SSCI databases. It is likely that there are other articles written by British occupational therapists that were not included in this count, particularly if they were published in journals not currently indexed in the JCR. However, this bibliometric analysis still provides a reasonable overview of the types and number of publications that have been generated by British occupational therapy authors in the last 2 decades. It was notable that there was a marked trend in both increased number and length of articles published by British authors. Reasons for this occurrence could include the fact that the BJOT was accepted for inclusion in the JCR database in 2012, the number of occupational therapy journals that now have an established IF has increased (e.g., OTI, CJOT, AJOT, POPT, SJOT, AOTJ, and HKJOT), and finally the number of occupational therapy-specific journals has increased overall (e.g., InJOT, PJOT, ASJOT, WFOT Bulletin, and OJOT).

Post 2000, there also have been increases in the number of occupational therapy education programs and the number of occupational therapists completing doctoral-level qualifications in the UK (AOTA, 2013; Pages & Persch, 2016). Therefore, the pool of potential occupational therapy authors as well as universities that employ them has increased (Jackson, 2015; Sainty, 2013). Further, it is likely that the occupational therapy academic staff employed in university education programs have the requirement to meet research outputs as part of their yearly key performance indicators and that publishing in peer-reviewed journals is included under this umbrella (College of Occupational Therapists, 2007; Ilott, Taylor, & Bolanos, 2006; Scott, Justiss, Schmid, & Fisher, 2013). Citation Rates of Journal Articles Written by British Occupational Therapists

There were four journal articles published by British occupational therapy authors that had 200 or more citations (e.g.,  $TC_{2015} > 200$ ). Two of the four articles were published in *The Lancet*, three of the four articles were published in the 1990s, three of the four articles dealt with the clinical area of physical rehabilitation, and all four articles dealt with adult-related health issues. This shows a trend of occupational therapy authors publishing highly cited manuscripts in more medically oriented journals that have high IFs (e.g., *The Lancet*, *The British Medical Journal*), rather than in occupational therapy-specific journals. Johnson and Leising (1986), Reed (1988), and Potter (2010) noted similar trends among occupational therapy authors. In relation to citation analysis, Roberts (1992) reported that the BJOT had 79 citations in 1989, Reed (1988) reported that the yearly citation rate for the BJOT had

descended to just 49 in 1988, and finally Potter (2010) determined that the 2007 citation rate for the BJOT was 143.

In a review of AJOT, BJOT, and AOTJ, Ziviani et al. (1984) noted that the majority of articles published in BJOT focused on physical disabilities. Mountain (1997) also noted in a content review of articles published in BJOT that they primarily focused on clinical work with a strong representation of physical disabilities. In contrast to the findings of the current study, Pearl et al. (2014) reported that the majority of BJOT articles published from 2006 to 2010 focused on education.

Web of Science Core Collection Subject Categories and Journals

The top WSCC subject categories in which British authors published were rehabilitation, health care sciences and services, clinical neurology, and psychiatry. This is likely reflective of the areas of health care where occupational therapists are employed in the UK. Mountain (1997) determined that the majority of topics published by British authors in BJOT in 1997 addressed clinical work with a primary focus on physical disabilities. Neurology and mental health were also two other common subject areas in which British occupational therapy authors published. Pearl et al. (2014), in a comparison of five occupational therapy journals, determined that the contents of the BJOT articles covered a range of topics, including education, mental health, community, physical disabilities, and pediatrics.

The top five journals in which British occupational therapy authors published from 1991 to 2015 were BJOT, *Clinical Rehabilitation*, *Disability and Rehabilitation*, AOTJ, and SJOT. It is logical that BJOT would be a popular publishing outlet for British occupational therapy authors as well as AOTJ and SJOT. As noted by Rodger et al. (2007), BJOT, AOTJ, and SJOT were in the top six discipline-specific journals that were rated in terms of quality and prestige. It is also interesting to note that British authors appeared to publish more in AOTJ and SJOT than in AJOT. AOTJ may be a more accessible option for British authors given that Australia is in the British Commonwealth; there is a well-established tradition of British and Australian occupational therapists collaborating, and many therapists migrate between the two countries. SJOT may be a more amenable venue in which to publish for British occupational therapy authors given the UK's direct links with the Council of Occupational Therapy in Higher Education (ENOTHE) (Wilcock, 2002).

Franchignoni and Muñoz Lasa (2011) examined the bibliometric indicators of journals in the area of physical and rehabilitation medicine and determined that the top five performing journals were the *American Journal of Physical Medicine & Rehabilitation*, *Archives of Physical Medicine & Rehabilitation*, *Clinical Rehabilitation*, *Disability and Rehabilitation*, and the *Journal of Rehabilitation Medicine*. Concurrent with the findings of this study, two of these journals (*Clinical Rehabilitation* and *Disability and Rehabilitation*) fall into the second and third most frequent peer-reviewed contexts in which British occupational therapists publish their work. Reed (1988), Potter (2010), and Rodger et al. (2007) also noted that therapists published in nondiscipline-specific journals, including *Clinical Rehabilitation* and *Disability and Rehabilitation*.

**Institutional Publication Performance** 

The top 10 institutions that were linked with British occupational therapy authors were UofN, BUL, UofS, QMU, UofEA, KCL, UofM, UofU, UofB, and UofSa. Four of the universities are classified as red brick / Civic universities, since they were granted a charter before 1900 (UofN, UofSa, UofM, UofB), while another four are identified as being new since they were former polytechnics, further education colleges, and university colleges that were granted a full charter status in the 1980s

and 1990s (BUL, QMU, UofU, UofSa) (Case & Huisman, 2016). UofEA is referred to as a *plate glass* or 1960s university since it was founded between 1963 and 1992. KCL is a University of London college. The majority of these universities offer a dedicated entry-to-practice occupational therapy course, with the exception of UofN, UofM, KCL, and UofB. When the affiliations of the top 15 British occupational therapy authors are examined, five of them are from UofN and two are from BUL. UofN does not have an occupational therapy course whereas BUL does.

# **International Collaborations**

The top five countries with which British occupational therapy authors collaborated were Australia, the United States, Canada, Sweden, and the Netherlands. Australia and Canada are both in the British Commonwealth and this may have accounted for some of the professional links between these three countries. It is likely that the professional associations of the UK, the United States, Canada, and Australia also had formal links and information exchanges. Corr et al. (2005) noted that BJOT was receiving an increasing number of articles from overseas, such as from Australia and New Zealand (n = 22), the United States and Canada (n = 8), mainland Europe (excluding the UK) (n = 4), and the middle East (n = 3). The World Federation of Occupational Therapists (WFOT) was established in 1952 with Australia, the United States, Canada, Sweden, and the UK (among others) all being founding country members. This likely promoted collaborations between these five countries. The COTEC and the ENOTHE also likely promoted collaborations between the UK, Sweden, and the Netherlands.

#### Limitations

Data for the bibliometric analysis were obtained only from the online databases of the SCI-Expanded and the SSCI of the WSCC. Based on the JCR 2015, 8,778 journals in 176 WSCC categories and 3,212 journals in 57 WSCC categories in the SCI-Expanded and the SSCI are indexed. Therefore, only 73.2% of journals listed in the SCI-Expanded and 26.3% of journals listed in the SSCI were included in the analysis for this study. Also, journals not indexed in the WSCC were not included in the bibliometric analysis. "According to *Ulrich's Global Series Directory* (ProQuest, 2016), there are approximately 73,130 active, academic English-language journals in publication as of December 2013, so WSCC indexes about 15% of existing journals" (Carpenter, Cone, & Sarli, 2014, p. 1164). Therefore, it is possible that key occupational therapy journal articles published in occupational therapy-specific journals (e.g., OTHC, OTMH, POTG, NZJOT, OJOT, JOTSEI, SAJOT, and POTG) were missed or not included in this analysis. This is an acknowledged limitation.

Only the document type labelled "article" was considered in the WSCC. Other document categories (e.g., conference abstracts, book reviews, letters to the editor, editorials) were excluded since they did not report sufficient study details. This is also a second acknowledged weakness of the current bibliometric analysis. The third limitation relates to the temporal coverage of the journal articles included in the bibliometric analysis. Occupational therapy articles published before 1991 and after 2015 were not included in the current bibliometric examination. For journal articles published before the mid-1990s, there may be a chance that an electronic version of the article was not available and therefore may have been missed in the search and analysis.

The fourth limitation of the analysis was that only the terms "occupational therapy" and "occupational therapist(s)" were used as key search terms for the journal article publications in the SCI-Expanded and the SSCI. If British occupational therapy authors did not indicate that they were an occupational therapist or did not list an occupational therapy affiliation on their journal publications, it is possible that their articles may have been missed by the search strategy.

A final limitation is that the majority of the occupational therapy journals that are currently included in the JCR WSCC were only accepted into that database from 2009 to 2013. AJOT and OTJR were the first two occupational therapy journals to have a reported IF and they were accepted slightly earlier into the JCR WSCC. BJOT received its first IF in 2013. Therefore, the majority of the occupational therapy literature published in occupational therapy-specific journals published from 1991 to 2008 may have been missed as part of this analysis.

# **Future Research**

It is recommended that the bibliometric methodology be replicated in other countries to discern the most research productive institutions and authors in occupational therapy. This would provide valuable information for cross-institutional and international bench marking purposes. It is also recommended that a bibliometric analysis specific to occupational therapy practice areas (e.g., neurology, pediatrics, mental health, geriatrics, rehabilitation) be completed so that key journals, institutions, and authors in these areas can be identified.

#### Conclusion

The occupational therapy-related body of peer-reviewed literature written by British occupational therapists has grown over the last 2 decades, with a marked increase in the number of journal articles published yearly starting around 2006. From 1991 to 2015, 680 occupational therapy journal articles were published by 2,736 authors, most of whom were British. The top four WSCC categories for journal articles published by British occupational therapy authors were rehabilitation, health care sciences and services, psychiatry, and general and internal medicine.

The top five journals that are listed in the JCR WSCC in which occupational therapy authors have published are BJOT, *Clinical Rehabilitation*, *Disability and Rehabilitation*, AOTJ, and SJOT. The five institutions that generated the largest number occupational therapy articles were the University of Nottingham, Brunel University London, the University of Southampton, Queen Margaret University, and the University of East Anglia. The top four countries with which British occupational therapy authors most frequently collaborated in the writing of journal manuscripts were Australia, the United States, Canada, Sweden, and the Netherlands. British occupational therapy authors have and continue to make a notable contribution to the occupational therapy body of knowledge both in and outside of the UK.

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