Bibliometric Study of Research Productivity in Occupational Therapy and Physical Therapy/Physiotherapy in Four Western Countries and Five Asian Countries/Regions

Abstract

Introduction: High-quality research is the foundation of occupational therapy and physical therapy/physiotherapy. A bibliometric study on the research productivity of occupational therapy and physical therapy/physiotherapy scholars in different Western and Asian countries/regions could provide a snapshot of current research achievement in rehabilitation science.

Method: On the basis of an understanding of the leading role of rehabilitation research in Western countries and a recognition of achievements made by Asian occupational therapy and physical therapy/physiotherapy scholars, the current bibliometric study examined the research productivity of occupational therapy and physical therapy/physiotherapy professors and associate professors from four Western countries (Australia, Canada, the US, and the UK) and five Asian countries/regions (Hong Kong, Japan, Taiwan, Singapore, and South Korea). The h-indices of these scholars were retrieved online and aggregated to quantify the research productivity of institutions and countries/regions.

Results: Australia, Canada, Hong Kong, and the US were identified as countries/regions with higher research productivity in occupational therapy and physical therapy/physiotherapy. The institutions were ranked on the basis of the median h-indices of their professors and associate professors; the top 20 productive institutions with occupational therapy programs had a median h-index of 17.5 or higher, whereas the benchmark of the top 20 institutions with physical therapy/physiotherapy programs was 25.

Conclusion: Professors and associate professors in Australia, Canada, Hong Kong, and the US are productive in occupational therapy and physical therapy/physiotherapy research. The number of faculty members and university connections are regarded as important for research achievement. Recommendations for various levels of collaboration are provided.

Keywords. Bibliometric, occupational therapy, physical therapy, h-index, benchmarking

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Occupational therapy and physical therapy/physiotherapy are essential fields of knowledge and professions to help patients/people with disabilities across the lifespan to restore their physical and psychosocial functioning and improve their quality of life (American Occupational Therapy Association, n.d.a; American Physical Therapy Association, 2015). Rehabilitation science lays the foundation of occupational therapy and physical therapy/physiotherapy. High-quality research in these two fields plays an important role in informing the evidence-based practice and training of professionals (American Occupational Therapy Association, n.d.b; Paci, Cigna, Baccini, & Rinaldi, 2009). In addition, research is also the first step for academics in tackling the challenges of and seizing opportunities for developing rehabilitation science.

Rehabilitation science emerged and evolved in Western countries. The scientific research conducted since the seventeenth century on biological phenomena in animals and humans laid the foundation of rehabilitation. In the twentieth century, the increase in injuries and disabilities caused by two world wars acted as the catalyst to facilitate the development of rehabilitation professions (Conti, 2014); for example, Howard A. Rusk, a physician in the US, developed training programs for comprehensive rehabilitation in military hospitals during World War II, and he is regarded as the father of rehabilitation of the US (Blum & Fee, 2008). Comparatively speaking, the development of rehabilitation science in Asian countries came much later: occupational therapy and physical therapy/physiotherapy were introduced to countries/regions such as Hong Kong, Taiwan, and South Korea during the 1950s and 1960s (Chien & Lo, 2009;

Hunn, 1974; Wong & Fong, 2013), and the establishment of training programs and national/regional organizations did not come until the 1970s or 1980s (Han & Bang, 2007).

It is commonly agreed that Western countries have been taking the leading role in rehabilitation science research. According to a review and meta-analysis of the 100 most cited journal articles in rehabilitation based on the Journal Citation Report, Science Edition 2007 and 2008 (Shadgan, Roig, HajGhanbari, & Reid, 2010), all the articles were in English and most of them were written by authors from institutions in the US, followed by Canada and the UK. The leading role of Western countries can be attributed to their mature scientific communities and high research budgets (Shadgan et al., 2010).

The achievement of Asian scholars in rehabilitation science research, however, cannot be ignored. Countries/regions such as Japan, Hong Kong, and Taiwan had already established an advanced health care system, national/regional professional organizations, training programs in tertiary education, and infrastructural support for research in the 1970s and 1980s (Han & Bang, 2007). Hence, these Asian countries/regions have been increasingly able to produce impactful research in the field of rehabilitation. For example, as shown in a bibliometric analysis of articles published in the journal *Physical Therapy*, among the articles published in 2010 by international authors, over 16% were from Taiwan (Wiles, Matricciani, Williams, & Olds, 2012). Moreover, in another bibliometric study of occupational therapy publications from 1991 to 2014, Japan and Hong Kong were among the top 10 most productive countries/regions (Brown, Gutman, Ho, & Fong, 2018).

Today, Western and Asian scholars make equal contributions to the rehabilitation literature. As most of the mainstream rehabilitation theories, models, and interventions were developed in Western countries, Asian scholars have made efforts to test their cultural relativity

and effectiveness in their own contexts to localize the theories and practices. For example, the US-based Chronic Disease Self-Management Program was introduced to Hong Kong in 2001, and it was evaluated and adapted on the basis of a series of scientific studies (Chan, Siu, Poon, & Chan, 2005; Chan et al., 2011; Siu, Chan, Poon, Chui, & Chan, 2007). Asian scholars also developed indigenous rehabilitation models with collectivistic values embedded into them (e.g., the Kawa Model developed by a group of Japanese occupational therapists; see Iwama, 2006). In addition, Asian scholars have contributed to the rehabilitation literature through their scientific studies on complementary and alternative medicine (CAM) derived from traditional Chinese medicine (TCM), and these CAM approaches have attracted the attention of Western scholars for application in their countries (e.g., tai chi and qigong; Lauche, Wayne, Dobos, & Cramer, 2016; Tsang & Hui-Chan, 2004; Tsang et al., 2013).

Given the rising importance of global issues such as the aging population (World Health Organization, 2018), high-quality research in occupational therapy and physical therapy/physiotherapy is an important step for understanding the issues, advancing rehabilitation theories, and adapting service models. A bibliometric study of research productivity in countries making significant contributions to the rehabilitation literature can set the benchmark of high-quality research. According to the review above, it is important to include both Western and Asian countries/regions in order to gain a global snapshot of research productivity. Shadgan and colleagues (2010) remarked that research articles with a high impact were all written in English and that the US, Canada, the UK, and Australia were among the top 10 countries publishing these high-impact articles. Hence, these four Western countries were included in the present bibliometric study. As for Asian countries/regions, Hong Kong, Japan, Taiwan, Singapore, and

South Korea were selected because of their increasing research achievement as a result of economic advances and social development since the 1970s and 1980s.

While the bibliometric analyses on rehabilitation research mentioned above focused on publications (Brown et al., 2018; Shadgan et al., 2010; Wiles et al., 2012), the data used for analyses were limited to a certain period and/or journal. As a result, a bibliometric analysis based on the h-indices of scholars in occupational therapy and physical therapy/physiotherapy across different countries/regions is a better alternative. In addition, using the h-index of its affiliated scholars has the advantage of inferring the research productivity of an institution.

According to Hirsch (2005), the h-index reflects the quantity and quality of an author's research work. Assuming one author with N published articles, his/her h-index means a certain number (indicated as h) of articles published, with each cited at least h times, and the remaining $N - h$ articles of the author were cited less than h times. For example, an author has an h-index of 30 if he/she has published at least 30 articles that have been cited at least 30 times each. The h-index was adopted in previous bibliometric studies on the research productivity of physical therapy/physiotherapy or occupational therapy faculty members in Canada and Australia (Broome & Gray, 2017; MacDermid, Fung, & Law, 2015). Since the universities in the five Asian countries/regions included in the present bibliometric study were strongly influenced by the West, the h-index has become a commonly known and acceptable indicator of research productivity among Asian scholars. Some Asian universities have also adopted the h-index as the indicator of their faculty members' performance. Hence, it is believed that the h-index can adequately reflect the research productivity of occupational therapy and physical therapy/physiotherapy faculty members in Hong Kong, Japan, Taiwan, Singapore, and South Korea.

In summary, the present study involves a bibliometric analysis of the h-indices of occupational therapy and physical therapy/physiotherapy faculty members in four Western countries (the US, Canada, the UK, and Australia) and five Asian countries/regions (Hong Kong, Japan, Taiwan, Singapore, and South Korea). The study aims to benchmark high-quality rehabilitation research among these countries/regions and to identify the more productive countries/regions and institutions. Recommendations for collaboration and sharing experience among different institutions and across different countries/regions can be made from the study's findings. In this way, occupational therapy and physical therapy/physiotherapy scholars from different countries/regions could work together at different levels to tackle rehabilitation problems and contribute to rehabilitation research. The present study can also provide pilot data for benchmarking and ranking of occupational therapy and physical therapy/physiotherapy programs in the future.

Method

From November 2017 to April 2018, data on occupational therapy and physical therapy/physiotherapy faculty members and their ranks and positions were retrieved online from the websites of universities whose programs were listed on or directed from the "Entry Level Educational Programmes WFOT Approved" webpage on the official website of the World Federation of Occupational Therapists and the "Entry Level Physical Therapy Education Programmes" webpage on the official website of the World Confederation for Physical Therapy. The software Publish or Perish (Harzing, 2010) was used to identify the published articles and citations of identified faculty members through Google Scholar. In addition, Scopus and the university website profile and CV of each faculty member were looked into so that all misattributed citations could be either corrected or removed. For instance, where an identified

faculty member had published a large number of articles but shared a similar name to other scholars so that their articles could not easily be distinguished, the university website profile and/or CV of that identified faculty member, which in most cases showed all of his/her articles published to date, would be examined to identify the correct published articles. The h-index and the total number of citations of each identified faculty member as shown in Publish or Perish were collected and analysed in Excel. An identified faculty member was counted in the data only if he/she fulfilled the following criteria: (1) had graduated with at least a bachelor's or master's degree/higher diploma in occupational therapy or physical therapy/physiotherapy; (2) was working in an occupational therapy or physical therapy/physiotherapy department; (3) claimed to be a registered occupational therapist/physical therapist in their respective country/region; and (4) had published articles in journals related to occupational therapy or physical therapy/physiotherapy.

Where both Publish or Perish and Scopus yielded no results for an identified faculty member, his/her h-index and total number of citations were treated as zero. Where either Publish or Perish or Scopus did yield results but these could not be accurately attributed to the identified faculty member, that faculty member's h-index and total number of citations were left blank and he/she was excluded from the analysis. The various descriptors for each country/region, including Hong Kong, were then calculated and organized. All the analysed programs in all the identified countries/regions were ranked by their median h-indices and given rankings.

It should be noted that only the terms "Associate Professor" (which includes the equivalent UK rank of "Reader") and "Professor" (meaning full professors and chair professors) were used and not "Assistant Professor". Most Australian occupational therapy and physical therapy/physiotherapy departments do not have assistant professorship positions, and the

different meanings of this rank in the US, such as “Clinical Assistant Professor” and “Teaching Assistant Professor”, would cause great variance in the data. Thus, assistant professors and their equivalent ranks were not retrieved for reasons of consistency and accuracy. “Assistant Lecturers”, “Lecturers”, and “Senior Lecturers” were not included in the data.

In countries/regions where occupational therapy and physical therapy/physiotherapy programs abound, the disparity in the research productivity and research quality of such programs varies greatly. We therefore decided to analyse only a maximum of the top 20 programs of each country/region as ranked by the median h-index of each program. For the UK and Japan, all the occupational therapy and physical therapy/physiotherapy programs were identified but only the top 20 programs were analysed and included. For the US, it was not feasible to identify all of the occupational therapy and physical therapy/physiotherapy programs owing to the large number of such programs and the large population of occupational therapy and physical therapy/physiotherapy faculty members. Therefore, the sample size for the US was reduced to a temporary shortlist of the top 50 occupational therapy and physical therapy/physiotherapy programs identified under the 2016 ranking lists of “Best Occupational Therapy Programs” and “Best Graduate Physical Therapy Programs”. The lists were compiled by the publisher US News & World Report, which based the rankings solely on its results of peer-assessment surveys sent to faculty members for their ratings, from 1 (marginal) to 5 (outstanding), of the academic quality of the programs (US News & World Report, 2018). The 50 programs with the best mean ratings on those occupational therapy and physical therapy/physiotherapy lists were identified and their median h-indices calculated. The 20 programs with the highest median h-indices for occupational therapy and physical therapy/physiotherapy, respectively, were then retrieved for analysis.

For countries/regions where English is not commonly used, such as South Korea and Japan, retrieval of the h-indices of some scholars was particularly difficult because either they did not produce papers in English or their names were not recognized in citation websites, which predominantly use English. To ensure a reasonable level of accuracy, programs for which more than 50 percent of faculty members could not be identified were excluded from the data analysis.

Results

Occupational Therapy

Comparison by country/region

Table 1 shows that Canada had the highest mean number of Professors + Associate Professors per program (8.1), followed by Hong Kong (7) and the US (5.1). With regard to the research productivity of both professors and associate professors, those in Hong Kong had the highest mean total number of citations (2211.6), followed by faculty members in Australia (1771.2) and the US (1575.9). In terms of median h-index, Hong Kong (21), Australia (16), and Canada (14) were the top three productive countries/regions. Comparing the research productivity of professors only, Hong Kong scored the highest mean total number of citations (3196.8), followed by Australia (2793.8) and the US (2655.0). Hong Kong (31), Australia (25), and the US (20) achieved the top three median h-indices. In terms of the h-index of individual professors, one professor in the US had the highest h-index value (69), followed by professors in Canada (53) and Australia (41). In addition, the IQRs of the h-index of Professors + Associate Professors of the productive countries/regions mentioned above (i.e., Australia, Canada, Hong Kong, and the US) ranged from 14 to 16; the remaining countries/regions had IQRs of h-index lower than 10. This shows that productive countries/regions have larger spectrums of research performance among faculty members, offering greater potential for further achievement in the

long term. A full table showing the categories of "Professors", "Associate Professors", and "Professors + Associate Professors" are shown in Table 5 (supplementary on-line only file), with additional statistics on mean h-index, standard deviation of h-index, and range of h-indices provided.

[Insert Table 1 about here.]

Comparison by institution

For Professors + Associate Professors, 89 institutions with occupational therapy programs in the identified countries/regions were ranked on the basis of median h-index. The top 20 institutions are shown in Table 2. The top 20 included 5 institutions in Australia, 6 in Canada, 1 in Hong Kong, 1 in Taiwan, 1 in the UK, and 6 in the US. The top five institutions were the University of Sydney (Australia; joint 1st), Queen's University (Canada; joint 1st), the University of Queensland (Australia; 3rd), Boston University (the US; 4th), and La Trobe University (Australia; 5th). The median h-index of the top 20 institutions ranged from 17.5 to 33.0. The ranking of all institutions with occupational therapy programs based on the median h-index of Professors + Associate Professors and Professors only are shown in Table 6 and Table 7 (supplementary on-line only files).

[Insert Table 2 about here.]

Physical Therapy/Physiotherapy

Comparison by country/region

As shown in Table 3, Hong Kong had the largest number of Professors + Associate Professors per program (11), followed by Canada (8.8) and the US (7.7). The US scored the highest mean total number of citations for Professor (4573.3), while Australia scored the highest for Professors + Associate Professors (2579.1). For Professors + Associate Professors, Hong

Kong (23), Australia (20), and Canada (19) achieved the top three median h-indices. For Professors only, Hong Kong (30.5), the US (29), and Australia (29) had the three highest median h-indices. In terms of the h-index of individual professors, one professor in the US had the highest h-index value (69), followed by professors in Canada (67) and Australia (62). The IQRs of h-index of Professors + Associate Professors of productive countries such as Australia, Canada, the US, and the UK ranged from 15 to 18.5, while the remaining countries had IQRs of h-index lower than 10. Thus, there is more potential for further research achievement in the productive countries. However, the IQR of the median h-index of Hong Kong (7) was relatively low. A full table showing the categories of "Professors", "Associate Professors", and "Professors + Associate Professors" are shown in Table 5 (supplementary on-line only file), with additional statistics on mean h-index, standard deviation of h-index, and range of h-indices provided.

[Insert Table 3 about here.]

Comparison by institution

One hundred and nineteen institutions with physical therapy/physiotherapy programs in the identified countries/regions were ranked by their respective median h-indices (Professors + Associate Professors). The top 21 institutions are listed in Table 4 (since there are 3 institutions at the rank of 19); they include 5 in Australia, 4 in Canada, 6 in the UK, and 6 in the US. Their median h-indices ranged from 25 to 46. The top five institutions were La Trobe University (Australia; 1st), the University of Birmingham (UK; 2nd), Ulster University (UK; 3rd), the University of Minnesota – Twin Cities (US; 4th), and the University of British Columbia (Canada; 5th). The rankings of all institutions with physical therapy/physiotherapy programs based on the median h-index of Professors + Associate Professors and Professors only are shown in Table 6 and Table 7 (supplementary on-line only files).

[Insert Table 4 about here.]

Discussion

In the present bibliometric study, the h-indices of professors and associate professors from 89 institutions with occupational therapy programs and 119 institutions with physical therapy/physiotherapy programs in four western countries (Australia, Canada, the US, and the UK) and five Asian countries/regions (Hong Kong, Japan, Taiwan, Singapore, and South Korea) were collected and analysed to benchmark the research productivity of these countries/regions and the institutions with high-quality research in rehabilitation science. The study shows that Australia, Canada, Hong Kong, and the US are the productive countries/regions for rehabilitation research with high median h-indices, and the benchmarks of institutions with high-quality research (i.e., top 20) indicated by the median h-index are 17.5 for occupational therapy programs and 25 for physical therapy/physiotherapy programs.

The findings of the present bibliometric analysis support the significant contributions of both Western and Asian countries/regions in terms of rehabilitation research. The leading role of Western scholars, especially those from Australia, Canada, and the US, is confirmed in the present study. The Western countries tended to have more professors and associate professors per program, and the Western institutions made up the majority of the top 20 occupational therapy and physical therapy/physiotherapy programs according to the present bibliometric analysis. However, it is also important to recognize the progress and achievement of rehabilitation research in Asia. As shown in the present study, the research productivity of Hong Kong is comparable to that of productive Western countries. The National Taiwan University was among the top 10 productive institutions with occupational therapy programs, and the Hong Kong Polytechnic University was ranked the 12th most productive institution with occupational therapy

programs, together with McMaster University (Canada). In addition, among the 34 institutions with occupational therapy programs identified in the five Asian countries/regions, 4 were in the top 50% of institutions in terms of research productivity; similarly, of the 45 Asian institutions with physical therapy/physiotherapy programs, 7 were ranked in the top 50% of institutions in terms of research productivity.

The present study also reveals the different characteristics of occupational therapy and physical therapy/physiotherapy programs and scholars in different countries/regions. Australia, Canada, and the US are similar in the sense that they tend to have more professors and associate professors per program (both occupational therapy and physical therapy/physiotherapy). They are expected to have a larger scientific community in the field of rehabilitation science, and this could contribute to the distinguished achievements of these countries in both occupational therapy and physical therapy/physiotherapy research. Comparatively, the UK seems to have better research achievement in physical therapy/physiotherapy than in occupational therapy, since only one British institution was among the top 20 occupational therapy programs, whereas five institutions with physical therapy/physiotherapy programs were ranked 12th or above. The number of professors and associate professors per physical therapy/physiotherapy program (1.8) was also higher than that per occupational therapy program (1.1). As for the Asian countries/regions, they generally had better research achievement in occupational therapy than in physical therapy/physiotherapy. There were institutions in Hong Kong and Taiwan with occupational therapy programs and top-level research productivity, but the majority of Asian institutions with physical therapy/physiotherapy programs had median h-indices ranked in the lower 50 percentile. While there was only one institution (The Hong Kong Polytechnic University) in Hong Kong included in the present study, its number of professors and associate

professors was comparable to the average number of faculty members of the same rankings per program in Canada and the US. It is likely that the research productivity of Hong Kong benefits from the large scientific community in the Hong Kong Polytechnic University.

The findings of the present study can be compared with those by Broome and Gray (2017) concerning the research track record of Australian occupational therapy academics. Eighteen professors and 21 associate professors from Australia were identified and included in the analysis of the present study, and these numbers were comparable to what was reported by Broome and Gray (2017): among the 197 academics identified, 8.1% were professors and 9.1% were associate professors. Their median h-indices as of 2015 were 13 and 7.5, respectively (Broome & Gray, 2017). As shown in Table 1, the corresponding median h-indices of Australian professors and associate professors as of 2018 were 16 and 14, respectively. Such difference can be partly attributed to the research output of the professors and associate professors from 2015 to 2018; it can also be caused by the different databases used for bibliometric analysis. The h-indices retrieved for the present study were from Google Scholar, whereas Broome and Gray (2017) obtained h-indices from Scopus. Given the inclusion of more online sources, Google Scholar generally reports higher h-index than Scopus (Minasny, Hartemink, McBratney, & Jang, 2013). Broome and Gray (2017) also pointed out that scholars affiliated to the Group of Eight (Go8) universities had a stronger research track record because they had more resources and support for research. In the present study, the University of Sydney, the University of Queensland, and Monash University were among the top institutions with high-quality research productivity in occupational therapy and/or physical therapy/physiotherapy, and these three universities are Go8 members. It is noteworthy that La Trobe University was the most productive institution for physical therapy/physiotherapy research and was ranked 5th for research productivity in

occupational therapy. Although it is not among the Go8, it is a member of the Innovative Research Universities network. Such university connections seem to be important for attracting research funding and building up local and international research networks.

On the basis of the findings of the present study, it seems that having a sufficient number of academics is essential to the research productivity of an institution and a country/region. Strong connections and support among academics also contribute to research achievement. In addition, connections and cooperation among different universities are important to attract more resources and opportunities for research. However, it would be worthwhile to look into the contextual factors of the productive countries/regions and institutions that promote the research productivity of occupational therapy and physical therapy/physiotherapy scholars. Moreover, countries/regions and institutions can be engaged in various levels of local and international cooperation. On one hand, those with similar research productivity could seek a high level of research collaboration to conduct impactful studies (e.g., translational research, cross-cultural and cross-discipline research) and produce output so that global and complex issues of rehabilitation can be tackled. On the other hand, those with lower research productivity could line up with local or international institutions with higher research productivity for research support in examining contemporary rehabilitation practice.

The present study has some limitations. First, difficulties were encountered when trying to correctly identify the published work of some scholars whose names appeared on their department's website. There were cases when neither Publish or Perish nor Scopus were able to retrieve some scholars' published work, if there was any. Despite the great effort exerted to correctly identify as many scholars as accurately as possible, the absence of their h-indices may have affected the overall scores of their respective programs. This problem was most pronounced

in data retrieved from Japan and South Korea, where the medium of communication is usually not English and where translations or transliterations of the Japanese and Korean names of scholars were not always entirely accurate. This led to a low retrieval rate of occupational therapy and physical therapy/physiotherapy programs in Japan and South Korea. The language difficulties produced two undesirable outcomes: (1) it led to the generally low median h-indices for Japanese and South Korean programs; (2) non-English-language journals of potential scientific significance could be unknown to, or overlooked by, the English-speaking community and thus are not cited. As native and non-native English-speaking scholars from across the globe follow up research findings they can understand and collaborate to make further breakthroughs, language barriers likely hamper the dissemination, and thus the usage, of these 'hidden' research findings and will probably continue to do so. This inevitably hinders the overall global development of rehabilitation. Future studies could explore and analyse other indices that can reflect the impact of non-English research publications.

In addition, in order to ensure the feasibility of the present study, only a limited number of countries/regions and institutions were included. Other non-English-speaking countries in Europe (e.g., Scandinavian countries), other Asian countries/regions (e.g., Mainland China, India, and Israel), and African countries (e.g., South Africa) were beyond the scope of the present study. However, they could also be significant contributors to rehabilitation research. Future studies could analyse the research productivity of these countries/regions to complement the scope of the present study.

In conclusion, from the present bibliometric analysis of the research productivity of occupational therapy and physical therapy/physiotherapy scholars from nine countries/regions (including Australia, Canada, the US, the UK, Hong Kong, Japan, Taiwan, Singapore, and South

Korea), productive countries/regions such as Australia, Canada, Hong Kong, and the US were identified. The benchmarks of high-quality occupational therapy and physical therapy/physiotherapy research were indicated by the median h-indices of 17.5 and 25, respectively. The study provides a snapshot of research achievement in rehabilitation science of the nine countries/regions. It also implies that the large scientific community within and among institutions could bring more opportunities and resources for research, thus contributing to research productivity. Various levels of local and international cooperation among institutions and different countries/regions are recommended.

Key Points for Occupational Therapy

- Global occupational therapy development in rehabilitation can be evaluated using h-index.
- Australia, Canada, Hong Kong, and the US are the countries/regions with more research productivity in occupational therapy.
- The h-index benchmark of productive institutions (top 20) with occupational therapy programs in nine countries/regions is 17.5.

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Table 1

Descriptive characteristics of the sample of occupational therapy by country/region and academic position

Country/Region (listed in alphabetical order)	Category of faculty members	No. of programs	No. of faculty members	Mean total no. of citations	Median h-index	IQR h-index
Australia	Prof	10	18	2793.8	25	19 (14.75-33.75)
	Prof + Assoc. Prof	14	39	1771.2	16	16 (9.5-25.5)
Canada	Prof	14	59	2024.8	19	19.5 (6.5-26)
	Prof + Assoc. Prof	14	113	1551.7	14	16 (7-23)
Hong Kong (PolyU)	Prof	1	4	3196.8	31	12.25 (23.25-38.25)
	Prof + Assoc. Prof	1	7	2211.6	21	14 (17-31)
Japan Top 20	Prof	20	44	304.6	3	4 (1-5)
	Prof + Assoc. Prof	20	64	223.8	3	4 (1-5)
Singapore	Prof	0	/	/	/	/
	Prof + Assoc. Prof	1	2	/	/	/
South Korea	Prof	5	19	125.6	4	4.5 (3-7.5)
	Prof + Assoc. Prof	/	/	/	/	/
Taiwan	Prof	7	13	1734.2	17	6 (13-19)
	Prof + Assoc. Prof	7	31	1017.1	11	10 (7-17)
UK Top 20	Prof	3	3	1094.7	11	7.5 (9.5-17)
	Prof + Assoc. Prof	7	8	564.9	7.5	5.25 (5.75-11)
US Top 20	Prof	20	57	2655.0	20	15 (13-28)
	Prof + Assoc. Prof	20	102	1575.9	13	13 (8-21)

Note.

1. Prof = professor; Assoc. Prof = associate professor.
2. The category “Professor” corresponds to the ranks of “Professor”, “Full Professor” in the US, and/or “Chair Professor”. The category of “Associate Professor” corresponds to “Associate Professor” and/or “Reader” in the UK. “Assistant Lecturer”, “Lecturer”, and “Senior Lecturer” were not included in the data.
3. Ranked by their median h-indices, the “Top 20” programs were selected for the discrete categories of Professor only or Professor + Associate Professor. Hence, the programs are not necessarily the same in each category, meaning that the total number of faculty members in

"Prof + Assoc. Prof" may not be the sum of the number of members in "Prof" and "Assoc. Prof".

Table 2

Top 20 occupational therapy programs (Professor + Associate Professor) among institutions in Australia, Canada, Hong Kong, Japan, Singapore, South Korea, Taiwan, the UK, and the US based on ranking by median h-index

Rank	Institution	No. of faculty members	Region	Median H-index
1	University of Sydney	7	Australia	33.0
1	Queen's University	1	Canada	33.0
3	University of Queensland	4	Australia	29.5
4	Boston University	9	US	27.0
5	La Trobe University	2	Australia	26.5
6	University of Toronto	10	Canada	26.0
7	University of British Columbia	6	Canada	24.5
8	National Taiwan University	5	Taiwan	23.0
8	University of Salford, Manchester	1	UK	23.0
8	University of New Mexico	3	US	23.0
11	Tufts University	3	US	22.0
12	McMaster University	6	Canada	21.0
12	The Hong Kong Polytechnic University	7	Hong Kong	21.0
14	University of Florida	5	US	20.0
15	University of Sunshine Coast	1	Australia	19.0
15	McGill University	8	Canada	19.0
17	University of Pittsburgh	9	US	18.0
18	Monash University	4	Australia	17.5
18	Western University	6	Canada	17.5
18	University of Wisconsin—Milwaukee	10	US	17.5

Table 3

Descriptive characteristics of the sample of physical therapy/physiotherapy by country/region and academic position

Country/Region (listed in alphabetical order)	Category of faculty members	No. of programs	No. of faculty members	Mean total no. of citations	Median h-index	IQR h-index
Australia	Prof	17	33	3902.3	29	18 (18-36)
	Prof + Assoc. Prof	20	68	2579.1	20	15 (14.5-29.5)
Canada	Prof	13	60	3172.7	23	16.25 (15.75-32)
	Prof + Assoc. Prof	14	123	2334.2	19	16 (11-27)
Hong Kong (PolyU)	Prof	1	4	2930.3	30.5	7.5 (26.75-34.25)
	Prof + Assoc. Prof	1	11	1997.4	23	7 (19.5-26.5)
Japan Top 20	Prof	20	61	894.8	12	9 (7-16)
	Prof + Assoc. Prof	20	97	564.3	8	8 (5-13)
Singapore	Prof	0	/	/	/	/
	Prof + Assoc. Prof	1	2	/	/	/
South Korea	Prof	10	36	697.0	6	9.25 (4-13.25)
	Prof + Assoc. Prof	12	44	588.1	5	7 (3-10)
Taiwan	Prof	9	28	1654.3	19.5	11.5 (12.75-24.25)
	Prof + Assoc. Prof	11	67	928.4	11	10 (7.5-17.5)
UK Top 20	Prof	15	22	2491.8	22.5	13 (13-26)
	Prof + Assoc. Prof	20	36	1917.3	16.5	15.5 (9.75-25.25)
US Top 20	Prof	20	57	4573.3	29	17 (21-38)
	Prof + Assoc. Prof	20	154	2513.5	18	18.5 (10.25-28.75)

Note.

1. Prof = professor; Assoc. Prof = associate professor.
2. The category “Professor” corresponds to the ranks of “Professor”, “Full Professor” in the US, and/or “Chair Professor”. The category of “Associate Professor” corresponds to “Associate Professor” and/or “Reader” in the UK. “Assistant Lecturer”, “Lecturer”, and “Senior Lecturer” were not included in the data.
3. Ranked by their median h-indices, the “Top 20” programs were selected for the discrete categories of Professor only or Professor + Associate Professor. Hence, the programs are not necessarily the same in each category, meaning that the total number of faculty members in

"Prof + Assoc. Prof" may not be the sum of the number of members in "Prof" and "Assoc. Prof".

Table 4

Top 20 physical therapy/physiotherapy programs (Professor + Associate Professor) among institutions in Australia, Canada, Hong Kong, Japan, Singapore, South Korea, Taiwan, the UK, and the US based on ranking by median h-index

Rank	Institution	No. of faculty members	Region	Median H-index
1	La Trobe University	4	Australia	46.0
2	University of Birmingham	1	UK	39.0
3	Ulster University	1	UK	38.0
4	University of Minnesota--Twin Cities	3	US	35.0
5	University of British Columbia	12	Canada	31.5
6	Northumbria University	1	UK	31.0
6	Mayo Clinic School of Health Sciences	3	US	31.0
6	University of Florida	9	US	31.0
9	University of Sydney	9	Australia	30.0
10	University of Iowa	4	US	27.5
11	University of Southern California	15	US	27.0
12	Macquarie University	3	Australia	26.0
12	University of Toronto	11	Canada	26.0
12	King’s College London	3	UK	26.0
12	Oxford Brookes University	1	UK	26.0
12	University of Pittsburgh	10	US	26.0
17	Curtin University	11	Australia	25.5
17	Western University	10	Canada	25.5
19	University of Queensland	4	Australia	25.0
19	McGill University	9	Canada	25.0
19	Manchester Metropolitan University	3	UK	25.0

Note. Twenty-one countries/regions are reported in the table since there are three institutions at the rank of 19.