



ISSN:0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 10, Issue, 11(E), pp. 36014-36018, December, 2019

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

A BIBLIOMETRIC STUDY OF CLINICAL PRACTICE GUIDES ON PHYSIOTHERAPY INDEXED IN THE PHYSIOTHERAPY EVIDENCE DATABASE PEDro (2003-2017)

Torres-Pascual, C^{1*} and Torrell-Vallespín, S²

¹Department of Physiotherapy, Escola Universitària de la Salut i l'Esport, EUSES-Salt, Universitat de Girona, Spain

²Hospital de l'Esperança. Universitat Autònoma de Barcelona, Spain

DOI: <http://dx.doi.org/10.24327/ijrsr.2019.1011.4218>

ARTICLE INFO

Article History:

Received 06th August, 2019
Received in revised form 14th September, 2019
Accepted 23rd October, 2019
Published online 28th November, 2019

Key Words:

Bibliometric, Clinical practice guideline, Physiotherapy, Physical Therapy.

ABSTRACT

This article offers a bibliometric overview of the practice guidelines on physiotherapy indexed in the PEDro database between 2003 and 2017.

410 records correspond to guidelines of clinical practice, representing 1% of all production indexed in PEDro. Cardiothoracic and musculoskeletal disorders received most attention from researchers. Pain was the most researched problem and fitness training and education the most researched therapies. The interdisciplinary practices in the various subdisciplines were reflected in the differing degrees of authorship collaboration. Most of the research was carried out in universities located in the USA, the United Kingdom, Australia and Canada. The research outputs were scattered in many journals with a core of ten journals including some from the general medical and health sciences. This study provides an overview of the productivity and visibility of research work in clinical practice guidelines in physiotherapy. The results could be used to organize and prioritize future research efforts in research in the field.

Copyright © Torres-Pascual, C and Torrell-Vallespín, S, 2019, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Physiotherapy is the set of interventions that use physical agents to cure and prevent dysfunctions, and to help people affected by them to recover and adapt, to maintain an adequate level of health. Physiotherapists provide services in circumstances in which movement and function are threatened by ageing, injury, diseases, disorders, conditions or environmental factors.¹

The PEDro database is considered the main source of information for physical therapist because it has better coverage of scientific literature than other databases.^{2,3} The most common types of documents indexed on PEDro is the clinical trial, a document type that has increased in the last decade,⁴ as the main tool to build scientific evidence. Due to this increase, the number of systematic reviews has recently increased and that probably reflects the need to sum up the increasing amount of scientific evidence published in the discipline. The consolidation of the discipline and the incorporation of physiotherapists in inter and multidisciplinary teams in health sciences, has favoured the clinical practice guidelines (CPG) to consider the practice of the physiotherapist from clinical trials and systematic reviews of the field.

However, it is still under the volume of CPG present in PEDro. The difficulty in its planning, development and implementation⁵ makes the researcher's work focus on different document types, such as clinical trials, however the CPG are needed in clinical practice collecting and disseminate the most optimal scientific evidence which leads to a better health⁶ professional practice.

CPG favour the health care professionals in the diagnostic and therapeutic decisions based on scientific evidence.⁶ Knowledge of the current state of CPG related to physiotherapy can be a starting point for the development of health policies aimed at reducing the unjustified variability of certain practice of physical therapy. The relevance of the CPG is such that sometimes the indications laid down in them can serve as defence in litigation by praxis which have caused damage.⁷

The objective of the study is to analyze the scientific production in clinical practice guidelines indexed in the PEDro database between 2003 and 2017, and more specifically:

- To measure the scientific output, subdisciplines, body parts, problems and therapies.
- To determine the characteristics of authorship and the patterns of collaboration.

*Corresponding author: **Torres-Pascual, C**

Department of Physiotherapy, Escola Universitària de la Salut i l'Esport, EUSES-Salt, Universitat de Girona, Spain

- To identify the most productive journals and determine their presence in databases Web of Science.

MATERIALS AND METHODS

Descriptive bibliometric study. All the documents indexed on PEDro, Physiotherapy Evidence Database, between 2003 and 2017, from the fields established by the database itself. The data was collected in March 2018. Inclusion criteria: CPG. Exclusion criteria: incomplete records. The final production to be analyzed is 410 records.

Bibliometric indicators used were: temporary distribution, growth rate ($T = [(Nf - Ni / Ni) 100]$), production (specialty, part of the body, problems and therapy), authorship and collaboration (quotient between the number of authors/signatures), productivity authors, geographic coverage, Bradford's dispersion and Egghe's formulation ($k = (e^y \cdot Ym)^{1/p}$ and $ro = T(k - 1) / (k^p - 1)$, where $e^y = 1,781$, Ym = number of articles in the journal with the highest production and T = number of journals), language coverage and visibility according to the Web of Science.

RESULTS

Scientific production by type of specialty, part of the body, problems and therapy

A total of 410 CPG published in physiotherapy between 2003 and 2017 have been recovered in the database PEDro, representing the 1% of all production indexed on PEDro (2003-2017) (Table 1).

Table 1 Scientific production (2003-2017)

Year	No of articles	Cumulative articles	% articles	Cumulative %
2003	6	6	1.46	1.46
2004	4	10	0.97	2.43
2005	5	15	1.21	3.64
2006	11	26	2.68	6.32
2007	8	34	1.95	8.27
2008	11	45	2.68	10.95
2009	13	58	3.10	14.05
2010	23	81	5.61	19.66
2011	27	108	6.58	26.64
2012	49	157	11.95	38.20
2013	64	221	15.61	53.8
2014	61	282	14.87	68.67
2015	46	328	11.21	79.88
2016	55	383	13.41	93.30
2017	27	410	6.58	100
TOTAL	410		100	

The growth rate between 2003 and 2017 was 350%. The growth trend is exponential with an $R^2 = 0,80$ (Figure 1)

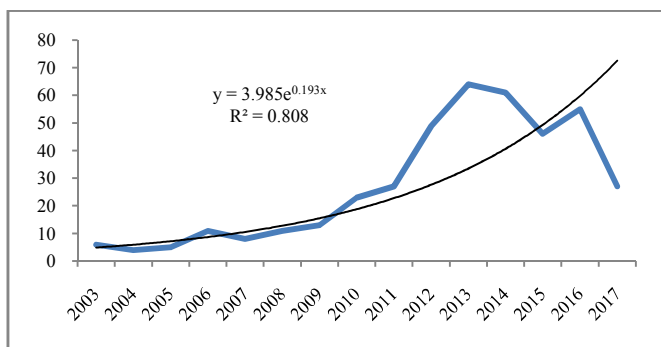


Figure 1. Evolution scientific production

The two subdisciplines of physiotherapy with higher production of CPG are: musculoskeletal (42.19%) and cardiothoracic (39.02%) (Table 2).

Table 2 Output by subdiscipline

Subdiscipline	Articles	% Articles
Cardiothoracic	160	39.02
Continent and women's health	54	13.17
Gerontology	50	12.19
Musculoskeletal	173	42.19
Neurology	67	16.34
Oncology	23	5.61
Orthopaedics	48	11.70
Other	85	20.73
Paediatrics	71	17.31
Sport	8	1.95

Analyzing the production by the body parts (table 3), there was a high percentage of records in the "others" field (68.53%).

Table 3 Output by body part

Body part	Articles	% Articles
Chest	102	24.87
Foot or ankle	23	5.61
Forearm or elbow	7	1.70
Hand or wrist	10	2.44
Head or neck	38	9.26
Lower leg or knee	52	12.68
Lumbar spine, sacrum-iliac joint or pelvis	43	10.48
Other	281	68.53
Perineum or genital or urinary system	39	9.51
Thigh or hip	38	9.26
Thoracic spine	8	1.95
Upper arm, shoulder or shoulder girdle	22	5.36

The most researched health problem has been the pain (59.75%) and reduced exercise tolerance (39.02%) (Table 4).

Table 4 Output by problem

Problem	Articles	% Articles
Difficulty with sputum clearance	43	10.48
Frailty	41	10
Impaired ventilation	98	23.90
Incontinence	43	10.48
Motor incoordination	45	10.97
Muscle shortening, reduced joint compliance	94	22.92
Muscle weakness	134	32.68
Oedema	28	6.83
Other	120	29.26
Pain	245	59.75
Reduced exercise tolerance	160	39.02
Reduced work tolerance	34	8.29
Skin lesion, wound, burn	26	6.34

In field therapies, the interventions with greater presence are: fitness training (84.14%) and education (83.17%) (Table 5).

Table 5 Output by therapy

Therapy	Articles	% Articles
Acupuncture	94	22.92
Behaviour modification	146	35.61
Education	341	83.17
Electrotherapies, heat, cold	154	37.56
Fitness training	345	84.14
Health promotion	71	17.31
Hydrotherapy, balneotherapy	46	11.22
Neurodevelopmental therapy, neurofacilitation	11	2.68
Orthoses, taping, splinting	116	28.29
Other	18	4.39
Respiratory therapy	105	25.61
Skill training	129	31.46
Strength training	263	64.14
Stretching, mobilization, manipulation, massage	208	50.73

Authorship and collaboration

A total of 4,823 authors have contributed to the whole of the 410 registered CPG between 2003 and 2017. 87.11% of authors are occasional (one article) and the remaining 12.79% are producing medium-sized (between 2 and 9 articles), and 0.10% are highly productive authors (≥ 10 articles), possibly for the short period of time analyzed. The three authors with increased production are L. Brosseau and G. Wells (Table 5).

Table 5 Output by prolific authors

Author	Institution	Country	Problem	Articles
L. Brosseau	University of Ottawa	Canada	Arthritis Osteoarthritis	16
G. Wells	University of Ottawa	Canada	Arthritis Osteoarthritis	14
P. Tugwell	University of Maryland School of Medicine Cincinnati Children's Hospital Medical Center	USA	Arthritis Osteoarthritis	12
L. Smith	Scottish Intercollegiate Guidelines Network	USA	Pediatric	11
L. Loew	University of Ottawa	Canada	Arthritis Osteoarthritis	10

The ten most productive institutions are: Institute for Clinical Systems Improvement-USA (4.87%), University of Toronto (4.14%), University of British Columbia(2.92%), University of Alberta(2.92%), American Heart Association (2.92%), McGill University(2.68%)andHywelDda University Health Board(2.68%).

The CPG development involves working collaboratively. The average number of authors per article, between 2003 and 2017, is 23.79 ± 9.78 . Although a relatively high degree of collaboration between the authors has been observed, there has not been such a degree of cooperation between author's joined institutions (4.10 ± 5.17) and their countries (1.43 ± 2.11). 78.67% of institutions participated in a single article during the 15 years period, while 20.85% signed from 2 to 9 CPG and 0.94% participated from ≥ 10 CPG.

Institutions joined by authors belong to 44 countries around the world. 49.09% of CPG production analyzed derives from researchers located in the United States, followed by UK (20%), Canada (15.27%), The Netherlands (8.72%) and Australia (7.63%)(Table 6).

Table 6 Scientific production by country

Country	% articles	Country	% articles
USA	49.09	Greece	0.72
United Kingdom	20	Hungary	0.72
Canada	15.27	Saudi Arabia	0.72
The Netherlands	8.72	South Africa	0.72
Australia	7.63	Turkey	0.72
Germany	4.36	Argentina	0.36
Italy	3.27	China	0.36
Belgium	2.91	Colombia	0.36
France	2.54	Egypt	0.36
Sweden	2.18	Estonia	0.36
Japan	1.81	Finland	0.36
Norway	1.81	India	0.36
Spain	1.81	Indonesia	0.36
Brazil	1.45	Israel	0.36
New Zealand	1.45	Luxemburg	0.36
Austria	1.09	Mexico	0.36
Czech Republic	1.09	Nicaragua	0.36
Denmark	1.09	Nigeria	0.36
Lebanon	1.09	Singapore	0.36
Poland	1.09	Switzerland	0.36
Canada	0.72	Taiwan	0.36

91% of the articles do not present collaboration international, 3.29% collaboration between 2 and 9 countries and the remaining percentage corresponds to collaborations from 10 to 23 countries (Figure 2).

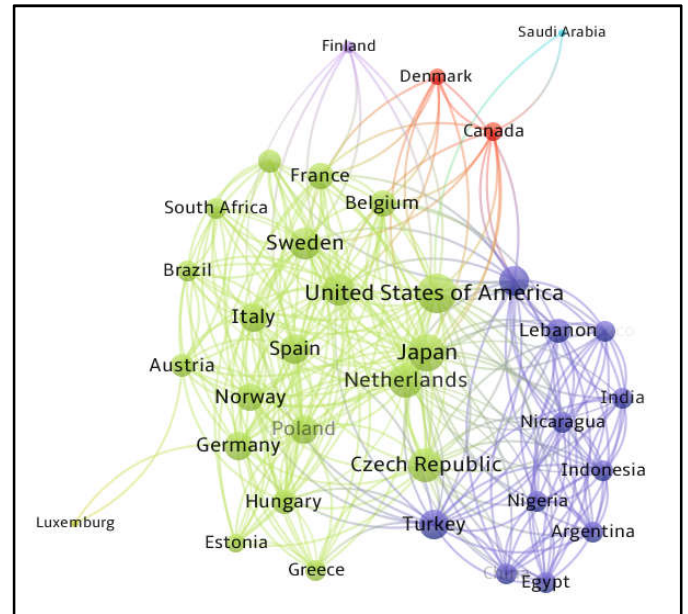


Figure 2. Collaboration international.

Journals

410 records recovered in PEDro, 268 CPG have been published in 128 journals, while 140 are located not in scientific journals, but on the website of the society or signatory institution.

Bradford's law of dispersion describes how the publications in an area are scattered in journals. Egghe's formulation (1986) has been applied to calculate the distribution of the journals according to the areas of Bradford. After applying the Egghe formula and obtaining a Bradford multiplier equal to 2.9, it is observed that the dispersion of the journals is adjusted to three zones. The core consists in 10 journals and 96 articles. Most of the core publications correspond to general health science and medicine journals and only two is approaching physical therapy, *Journal of Orthopaedic and Sports Physical Therapy* and *Physical Therapy*(Table 7).

Table 7 Core journals in physiotherapy

Journal	Articles	% Articles	Cumulative %
Circulation	15	5.59	5.59
Annals of Internal Medicine	13	4.85	10.44
Chest	10	3.73	14.17
European Heart Journal	10	3.73	17.90
The Journal of Orthopaedic and Sports Physical Therapy	10	3.73	21.63
Thorax	10	3.73	25.36
Canadian Medical Association Journal	7	2.61	27.97
European Journal of Neurology	7	2.61	30.58
Physical Therapy	7	2.61	33.19
Respiratory Care	7	2.61	35.82

In terms of language, 97.31% of articles are in English and 2.69% in 5 languages. The second language after English has been German (1.22%), French (1%) and the third Dutch, Hebrew and Spanish (0.24%). In a total of 128 magazines, we find that 88 journals (69.18%) with 121 items (44%) were

indexed in ISI Journal Citation Reports (JCR). These 88 magazines were classified into 27 subject categories, most away from physical therapy. The main categories have been SURGERY(14.01%), REHABILITATION, CRITICAL CARE CARDIAC & CARDIOVASCULAR SYSTEMS(11.07%), CLINICAL NEUROLOGY (11.21%). There isn't a specific category of physiotherapy in the JCR, being REHABILITATION the closest in terms of characteristics and competencies.

Almost all the journals analyzed had an impact factor above average, with the 80.17% in the first quartile, 32.91% second, 21.35% third and 8.01% fourth quartile.

DISCUSSION

While Europe, United States, Canada and Australia are active and present a path in the implementation of the CPG, other countries such as Korea begin to establish priorities within its framework of national health for the development of these.⁸

Even though there are multiple factors to publish in collaboration (sharing knowledge and resources, improve the quality of research, etc.),⁹ basically, in the analyzed production the main reason sign derives from the multidisciplinary work in collaboration, where necessary share very technical knowledge. The different interdisciplinary practices in the various disciplines are reflected in the varying degrees of collaboration among authors, which is higher in those specialties that require to being treated by professionals from different disciplines in large centers health and universities. The main area of research is the musculoskeletal, sub discipline that includes nearly 150 diseases and syndromes, usually associated with pain and loss of physical functions. WHO warns of the impact of injuries of the musculoskeletal system, for being the leading cause of disability. Only traffic accidents leave every year 50 million people with musculoskeletal and neurologic consequence, and those consequences derived from occupational accidents should be added to that. It is necessary to pay attention to the lack of CPG in gerontology and oncology, given the aging of the population. The second area of research on CPG is the cardiothoracic, considering them essential for the implementation of protocols.¹⁰ Certainly, the management of these conditions must be based on a multidisciplinary approach given the complexity of the clinic, which favours the development of guidelines with unified management guidelines. According to whom, in 2015 coronary, cardiovascular accidents, respiratory infections and chronic lung diseases were the leading causes of death worldwide, so it is necessary to have protocols of scientific evidence-based unified action. The most researched health problem has been the pain since it needs CPG for the unification of criteria.¹¹ This is logical because pain is present in most of the conditions treated by physiotherapist. Due to painful body area presents a reduction in muscle strength and tone, it is understandable that the second and third research problem has been the reduction of tolerance to exercise and muscle weakness. Therapies studied were those related to physical training and education. It is surprising that, while the pain is the most examined problem, directed treatment interventions have not been widely investigated. This has been the case of electrotherapy or acupuncture. However, there is coherence between disciplines with the largest number of registrations in CPG and

interventions, since the recovery of patients with pathology musculoskeletal or cardiothoracic through physical training and education guidelines.

The high degree of collaboration between authors is since the majority of CPG are made by health agencies, public and private, responsible for the policies of management of the quality of health care, as Ottawa Panel, National Institute for Health and Care Excellence in the UK, the National Health and Medical Research Council in Australia, or the Agency for Healthcare Research and Quality in the US. Even though, the specialization of knowledge should be dealt with internationally, it is not the case of the documentary type analyzed since they have little collaboration between countries. Thus, it is necessary to continue working to share knowledge at the international level to increase the quality of investigations.⁹ Given that the CPG are carried out within the framework of multidisciplinary journals of choice for the publication of the results correspond basically to categories medical and health, and not specifically physiotherapy, surely its wholesale Sciences research career Coronado *et al.* (2011)¹² made it clear in his bibliometric study in the Journal of Orthopaedic & Sports Physical Therapy, magazine of physical therapy, located in the nucleus, the need to continue working to increase the volume of clinical trials for best evidence in the different areas of physiotherapy, following in this line must be set to publish the results of the CPG to achieve an optimal clinical practice evidence-based.

The high presence of occasional authors, the low degree of institutional collaboration and by countries, the high dispersion of production in a wide range of journals, as well as the fact that researchers publish in journals of general medicine and health science to achieve a greater impact, reflects a lack of consolidation of scientific production in CPG related to physiotherapy. Similarly, the analysed production reflects low visibility, since a large percentage of CPG is not registered in journals with impact factor. However, the fact that almost all of the journals are published in English helps that the CPG in physiotherapy have a greater scope, at the same time, is associated with the publications in English greater methodological quality, as it is the case with clinical trials.¹³

CONCLUSION

Although within multidisciplinary teams, medical area seems to have a greater presence, physical therapists must continue working collectively, both from the clinical side as a researcher, to reflect its role within the CPG. Discipline should look to get a further consolidation with the highest number of authors involved in the different fields that investigate and specialize, and create bridges of international collaboration by publishing the results of the CPG in journals of impact.

References

1. World Confederation for Physical Therapy. Policy statement: Description of physical therapy. London, UK: WCPT; 2017. www.wcpt.org/policy/ps-descriptionPT (Access date 30th March 2018).
2. Moseley AM, Sherrington C, Elkins MR, *et al.* Indexing of randomised controlled trials of physiotherapy interventions: a comparison of AMED, CENTRAL, CINAHL, EMBASE, hooked on evidence, PEDro,

- PsycINFO and PubMed. *Physiotherapy*. 2009; 95(3): 151-56.
3. Michaleff ZA, Costa LO, Moseley AM, *et al*. CENTRAL, PEDro, PubMed, and EMBASE Are the Most Comprehensive Databases Indexing Randomized Controlled Trials of Physical Therapy Interventions. *PhysTher*. 2011; 91(2): 190-97.
 4. Geha NN, Moseley AN, Elkins MR, *et al*. *Respiratory Care*. 2013; 58(11): 1899-06.
 5. Leach MJ, Segal L. Are clinical practical guidelines (CPGs) useful for health services and health workforce planning? A critique of diabetes CPGs. *Diabet Med*. 2010; 27(5): 570-77.
 6. Ryan MA. Adherence to Clinical Practice Guidelines. *Otolaryngology-Head and Neck Surgery*. 2017; 1:194599817718822. doi: 10.1177/0194599817718822.
 7. Ruhl DS, Siegal G. Medical Malpractice Implications of Clinical Practice Guidelines. *Otolaryngology-Head and Neck Surgery*. 2017; 1:194599817707943. doi: 10.1177/0194599817707943.
 8. Jo HS, Kim D, Oh MK. National Priority Setting of Clinical Practice Guidelines Development for Chronic Disease Management. *J Korean Med Sci*. 2015; 30(12): 1733-42.
 9. Iglič H, Doreian P, Kronegger L, Ferligoj A. With whom do researchers collaborate and why? *Scientometrics* 2017; 112(1): 153-74.
 10. Anguita M, Fernández-Ortiz A, Worner F, *et al*. The Quality and Reporting of Randomized Trials in Cardiothoracic Physical Therapy Could Be Substantially Improved. *Rev EspCardiol*. 2011; 64(9): 795-96.
 11. Boyd CM, Darer J, Boulton C, *et al*. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance. *JAMA*, 2005; 294(6): 716-24.
 12. Coronado RA, Riddle DL, Wurtzel WA, George SZ. Bibliometric analysis of articles published from 1980 to 2009 in physical therapy, *journal of the American Physical Therapy Association*. *PhysTher*. 2011; 91(5): 642-55.
 13. Shiwa SR, Moseley AM, Maher CG, Pena Costa LO. Language of publication has a small influence on the quality of reports of controlled trials of physiotherapy interventions. *J ClinEpidemiol*. 2013; 66(1): 78-84.

How to cite this article:

Torres-Pascual, C and Torrell-Vallespín, S.2019, Torres-Pascual, C and Torrell-Vallespín, S., A Bibliometric Study of Clinical Practice Guides on Physiotherapy Indexed In The Physiotherapy Evidence Database PEDro (2003-2017). *Int J Recent Sci Res*. 10(11), pp. 36014-36018. DOI: <http://dx.doi.org/10.24327/ijrsr.2019.1011.4218>
