

A Quantitative Analysis of Prevalence and Characteristics for Reporting High-Quality Evidence in Physical Therapy Journals- A Systematic Review

Senthil P. Kumar*, Nisha Rani Jamwal**

Abstract

Context: Physiotherapy/ physical therapy practice, education, research and administration depend upon an evidence-based shared interpersonal decision-making process which in turn is based upon individual professional expertise and existing research evidence. The growing quantity and quality of research in evidence-informed physical therapy dictated and essentiated a leading role by professional scholarly journals. *Aims:* This study aimed to perform a quantitative analysis of systematic reviews/ meta-analyses and randomized controlled trials in physiotherapy journals indexed in MEDLINE/ PubMed. *Settings and Design:* Systematic review of physical therapy journals. *Methods and Material:* Twelve English-language physical therapy journals [Physical Therapy (PT)/ Journal of American Physical Therapy Association (JAPTA), Physiotherapy (PT), Journal of Physiotherapy (JoP)/ Australian Journal of Physiotherapy (AJP), Journal of Physical Therapy Science (JPTS), Physical Therapy Reviews (PTR), Physiotherapy Theory and Practice (PTP), Physiotherapy Research International (PRI), Physiotherapy Canada (PC), Brazilian Journal of Physical Therapy (BJPT), Journal of Japanese Physical Therapy Association (JJPTA), and Progress in Physical Therapy (PPT)] were identified using advanced search, and they were searched for articles with filters activated for article types- systematic reviews, meta-analysis, and randomized controlled trials, on 27th March 2016. The overall and study-specific and journal-specific reporting rates were computed descriptively using frequencies and percentiles in SPSS for Windows version 11.5. *Results:* The overall reporting rate among all journals was 4.38% for RCTs and 3.51% for SR/MAs respectively. PRI had the highest reporting rate for RCTs at 9.61% (57/593) followed by JoP/AJP at 7.79% (134/1720), and PTP at 7.69% (46/598). PRI also had the highest reporting rate for SR/MAs at 7.25% (43/593), followed by PTP at 7.02% (42/598) and BJPT at 5.74% (17/296). *Conclusions:* The overall reporting rate for high quality evidence in physical therapy journals was very low and there were only few randomized clinical trials and systematic reviews found. The study findings indicate a lack of adequate high quality evidence base in physical therapy literature published by physical therapy journals indexed in PubMed.

Keywords: Evidence-Based Physical Therapy; Research Evidence; Journal Reporting; Ppublication Trend.

Introduction

Physiotherapy/ Physical Therapy in its professional

Author Affiliation: *Professor and Head, Department of Physiotherapy, School of Allied Health Science and Research, Sharda university, Plot No. 32-34, Knowledge Park III, Greater Noida, Uttar Pradesh 201306. **Consultant Physiotherapist and Freelance Practitioner, Udhampur, Jammu & Kashmir, India.

Reprint Request: Senthil P. Kumar, Professor and Head, Department of Physiotherapy, School of Allied Health Science and Research, Sharda university, Plot No. 32-34, Knowledge Park III, Greater Noida, Uttar Pradesh 201306.

E-mail: senthilparamasivamkumar@gmail.com

evolution in practice, education, research and administration is now inherently dependent upon an evidence-based shared interpersonal decision-making process which in turn is based upon individual professional expertise and existing research evidence [1]. This evidence-informed physical therapy further necessitates quality appraisal and evaluation of level of evidence of published articles prior to extrapolating their conclusions into a typical situation [2].

Systematic reviews (SR) and meta-analyses (MA) are regarded as the highest level of evidence (1a) in the evidence pyramid during literature search and

quality appraisal for developing clinical practice guidelines and consensus recommendations [3]. SR are qualitative summaries of published literature selected for their homogeneity on patient characteristics, interventions/procedures, comparisons and outcomes based upon a specific research question which is diagnostic, therapeutic or prognostic [4]. MA are quantitative summaries of the same, and they provide statistical estimates not only of direction but also of magnitude in terms of 'effect size'. Some MA measures were standardized mean difference, relative risk, and odd's ratio, and MA always present forest and funnel plots in their graphical presentation of results [5].

Randomized controlled trials/ randomized clinical trials (RCTs) are ranked next in the evidence pyramid, and are the highest quality of evidence among primary research [6]. RCTs are experimental studies that either involve subject selection by random sampling or treatment selection by random assignment of treatment allocation [7]. The 'random'ness in methodology aims to reduce extrinsic and intrinsic bias thus enhancing external and internal validity of study findings in terms of contribution to evidence [8]. A controlled trial is one where the control group receives no treatment at all, whereas a clinical trial involves control group receiving standard care or conventional treatment [9]. Other comparators involve sham intervention such as a detuned intervention equipment or placebo such as an inactive intervention with induced positive therapeutic expectation in the subject [10].

The growing quantity and quality of research in evidence-informed physical therapy dictated and essentiated a leading role by professional scholarly journals. Thus this study was aimed to perform a quantitative analysis of systematic reviews/meta-analyses and randomized controlled trials in physiotherapy journals indexed in MEDLINE/ PubMed.

Materials and Methods

Systematic review of twelve English-language physical therapy journals [Physical Therapy (PTJ)/ Journal of American Physical Therapy Association (JAPTA), Physiotherapy (PT), Journal of Physiotherapy (JoP)/ Australian Journal of Physiotherapy (AJP), Journal of Physical Therapy Science (JPTS), Physical Therapy Reviews (PTR), Physiotherapy Theory and Practice (PTP), Physiotherapy Research International (PRI), Physiotherapy Canada (PC), Brazilian Journal of Physical Therapy (BJPT), Journal of Japanese Physical Therapy Association (JJPTA), and Progress in Physical Therapy (PPT)] were identified using advanced search, and they were searched for articles with filters activated for article types-systematic reviews, meta-analysis, and randomized controlled trials, on 27th March 2016. The overall and study-specific and journal-specific reporting rates were computed descriptively using frequencies and percentiles in SPSS for Windows version 11.5.

Results

Main Findings

PRI had the highest reporting rate for RCTs at 9.61% (57/593) followed by JoP/AJP at 7.79% (134/1720), and PTP at 7.69% (46/598). PRI also had the highest reporting rate for SR/MAs at 7.25% (43/593), followed by PTP at 7.02% (42/598) and BJPT at 5.74% (17/296). Two journals-PTR and PPT did not have any SR/MA or RCT. The results are shown in table-1 for journal-wise data. The relative contribution of PT journals and their comparisons are depicted in Figures 1,2 and 3.

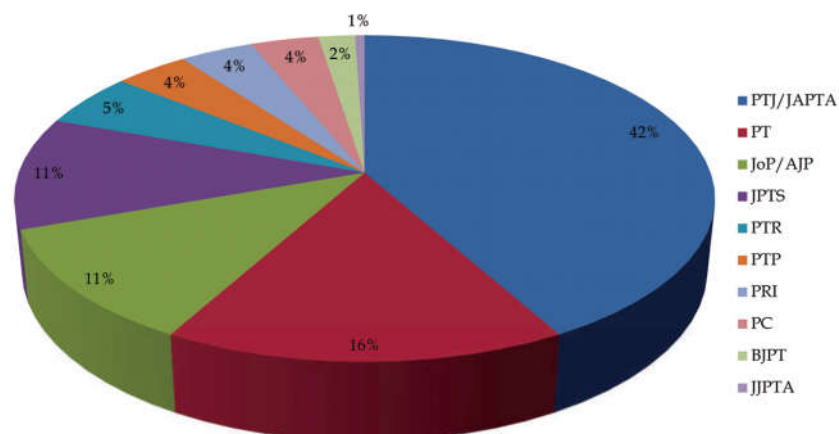


Fig. 1: Relative contribution by physical therapy journals for evidence in pubmed

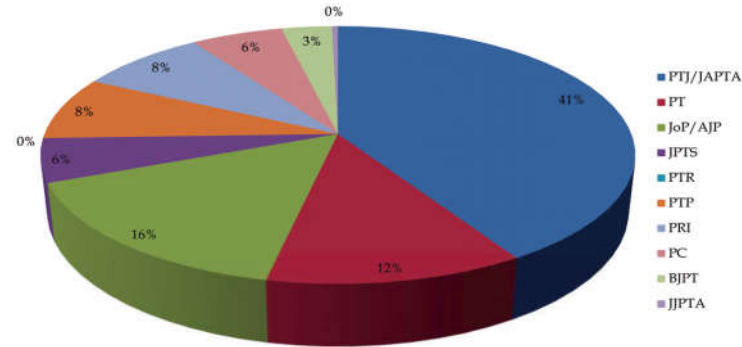


Fig. 2: Relative contribution by physical therapy journals for systematic reviews/ meta-analyses

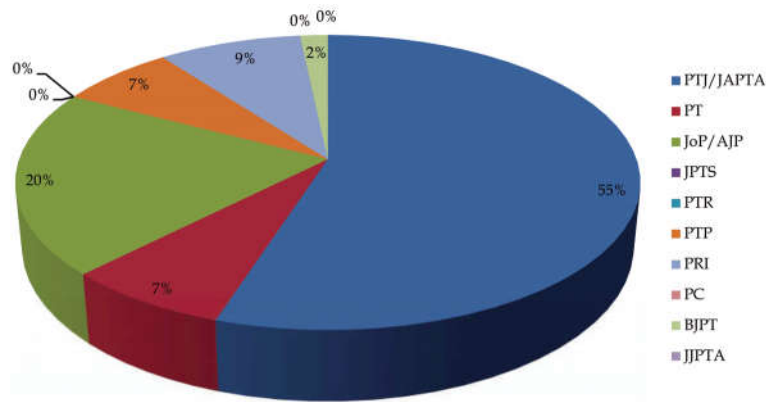


Fig. 3: Relative contribution by physical therapy journals for randomized controlled trials

Table 1: Comparison of reporting rates of systematic reviews/meta-analyses and randomized controlled trials among physical therapy journals indexed in PubMed

Name of journal	Total citations in PubMed N	Systematic reviews/ Meta-analyses (SR/MA) N1	Reporting rate for SR/MA N1/N %	Randomized controlled trials (RCT) N2	Reporting rate for RCT N2/N %
Physical Therapy (PTJ)/ Journal of American Physical Therapy Association (JAPTA)	6297	218	3.46	363	5.76
Physiotherapy (PT)	2414	64	2.65	49	2.02
Journal of Physiotherapy (JoP)/ Australian Journal of Physiotherapy (AJP)	1720	83	4.82	134	7.79
Journal of Physical Therapy Science (JPTS)	1666	29	1.74	0	0
Physical Therapy Reviews (PTR)	799	0	0	0	0
Physiotherapy Theory and Practice (PTP)	598	42	7.02	46	7.69
Physiotherapy Research International (PRI)	593	43	7.25	57	9.61
Physiotherapy Canada (PC)	552	31	5.61	0	0
Brazilian Journal of Physical Therapy (BJPT)	296	17	5.74	11	3.71
Journal of Japanese Physical Therapy Association (JJPTA)	77	2	2.59	0	0
Progress in Physical Therapy (PPT)	46	0	0	0	0
Total	15,058	529	3.51	660	4.38

Discussion

This first-of-its-kind study aimed at identifying the scholarly role played by PubMed-indexed PT journals towards dissemination of high quality evidence, and the findings were partially accepting the null hypothesis that very less RCTs and SR/MAs are published by PT journals. The causes may be two-fold; that either such studies are published in other medical and/or rehabilitation journals in PubMed, or in journals indexed in databases other than PubMed, such as Scopus, Proquest etc.

The study findings are in agreement with universally lesser prevalence of SR/MA in biomedical field in general, and also, similar reviews by Kumar and colleagues found lesser reporting rates for SR/MA [11] and for RCTs [12] respectively in PubMed-indexed palliative care journals. Those two previous reviews also performed content analysis which implicated evidence-informed practice. Such analyses are warranted in PT journals to inform disease-specific, population-specific and outcome-specific queries for evidence [13].

Effectiveness studies should emphasize measurements of benefits and harm equally since evidence needs to account for other associated confounders such as placebo and nocebo [14]. Other suggestion for future high quality studies to incorporate reporting guidelines such as PRISMA [15] for systematic reviews/ meta-analyses and CONSORT [16] for RCTs. PT Journals need to ensure that their editorial policies and authors' instructions meet the demand of providing high quality evidence in the best standards of reporting. Review by McCarthy et al [17] is the best example, and such reviews are needed for PT journals and their performance trend. Such reviews would establish the journals' role in their profession, as previously reported for palliative care [18] rehabilitation [19] and manual/ manipulative therapy [20].

One major assumption of this review relied upon the accuracy of PubMed search filter and verification of study design was not done manually as a second-level. There is a possibility that SR/MA was listed as simple review or RCT was listed as a Controlled clinical trial or clinical trial in PubMed, and vice versa. The search strategy utilized in this study was a non-validated and is prone to selection/ inclusion bias which would limit the applicability of this review. Other limitation of this review was inclusion of only English-language journals which reduced the opportunity for assessing high quality PT evidence in other languages.

Other incidental observations include; (1): Although PTJ is the top-ranked PT journal indexed in PubMed for many years, the reporting rate was less due to overall large number of articles published and its monthly publication periodicity; (2): PRI had highest reporting rate for both SR/MA and RCT which indicated its emerging leadership role as a high quality evidence provider among PT journals; (3): Many journals (PT, JPTS and PC) published more SR/MA than RCT which might be attributed to editorial policies of trial registration and ethical issues associated with RCT [21] thus making SR/MA easily publishable than a RCT; (4): PTJ holds the most number of high quality evidence compared to other journals understandably due to its well-developed editorial and publishing policies, and hence its contribution to evidence base for PT in PubMed is worth mentioning.

PubMed was chosen since it was regarded as a holy grail of evidence [22] or as an altar of science [23] in literature search, and hence the study findings might be extrapolated to reflect the current status of evidence per se. However the current status of practice also needs to be reported as practice-based evidence [24] and both goes hand-in-hand towards scientific development of the profession.

Disclosure

SPK is chief editor for *Journal of Physical Therapy (JPT)* and associate editor for *Physiotherapy and Occupational Therapy Journal (POTJ)*, both of which were not included in this review since they are not indexed in PubMed.

Conclusion

The overall reporting rate for high quality evidence in physical therapy journals was very low and there were only few randomized clinical trials and systematic reviews found. The study findings indicate a lack of adequate high quality evidence base in physical therapy literature published by physical therapy journals indexed in PubMed. However, similar reviews of journals indexed in other databases or other professional disciplines would be warranted to identify the source of high quality evidence in PT.

References

1. Kumar SP, Sisodia V, Kumar A. Evidence for Physiotherapy/Physical Therapy: a 40-year Trend

- Analysis and Explorative Synthesis of Articles. *Saudi Journal for Health Sciences*. 2013; 2(1): 22-30.
2. Kumar SP, Sisodia V. Analyses of Evidence for Hierarchy and Levels of Evidence: an Exploratory Quantitative Synthesis. *Ibnosina Journal of Medicine and Biomedical Sciences*. 2013; 5(3): 131-9.
 3. Abbas Z, Raza S, Ejaz K. Systematic reviews and their role in evidence-informed health care. *J Pak Med Assoc*. 2008; 58(10): 561-7.
 4. Katapodi MC1, Northouse LL. Comparative effectiveness research: using systematic reviews and meta-analyses to synthesize empirical evidence. *Res Theory Nurs Pract*. 2011; 25(3): 191-209.
 5. Maier W, Möller HJ. Meta-analyses: a method to maximise the evidence from clinical studies? *Eur Arch Psychiatry Clin Neurosci*. 2010; 260(1): 17-23.
 6. Pandis N. The evidence pyramid and introduction to randomized controlled trials. *Am J Orthod Dentofacial Orthop*. 2011; 140(3): 446-7.
 7. Brighton B1, Bhandari M, Tornetta P 3rd, Felson DT. Hierarchy of evidence: from case reports to randomized controlled trials. *Clin Orthop Relat Res*. 2003; (413): 19-24.
 8. Devereaux PJ1, Yusuf S. The evolution of the randomized controlled trial and its role in evidence-based decision making. *J Intern Med*. 2003 Aug; 254(2): 105-13.
 9. Manchikanti L1, Hirsch JA, Smith HS. Evidence-based medicine, systematic reviews, and guidelines in interventional pain management: Part 2: Randomized controlled trials. *Pain Physician*. 2008 Nov-Dec; 11(6): 717-73.
 10. Kumar SP, Adhikari P, Jeganathan PS, D'Souza M, Misri ZK, D'Souza SC. Efficacy of Placebo/Sham Interventions in Diabetic Peripheral Neuropathy: Lessons Learned from Systematic Review of Placebo-Controlled Clinical Trials. *J Psychiatric Nurs*. 2013; 2(3): 9-23.
 11. Kumar SP. Reporting of systematic reviews and meta-analyses: a bibliometric analysis of research publications in palliative care journals. *International Journal of Biomedical and Advanced Research*. 2012; 3(6): 502-10.
 12. Kumar SP, Sisodia V. Reporting of randomized clinical trials- a systematic review of qualitative and quantitative analysis of research publications in palliative care journals. *Saudi J Health Sci*. 2013; 2(2): 93-102.
 13. Jamwal NR, Kumar SP, Samuel AJ. Physiotherapy/ Physical Therapy Journals: Earthing or Unearthing of Scientific Evidence. *PhysiotherOccupTher J*. 2016; 9(1): 27-30.
 14. Kumar SP. Mechanisms of Placebo and Nocebo: Are We Counting Chickens Before They Hatch? *J PhysTher*. 2013; 7(2): 36-42.
 15. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*. 2009; 6(7): e1000097.
 16. Kumar SP. Sorting out lemons and oranges: towards a better quality of reporting clinical trials in *Journal of Physical Therapy- the CONSORT 2010 statement*. *J PhysTher*. 2010; 1(1): 1-10.
 17. McCarthy JE1, Chatterjee A, McKelvey TG, Jantzen EM, Kerrigan CL. A detailed analysis of level I evidence (randomized controlled trials and meta-analyses) in five plastic surgery journals to date: 1978 to 2009. *Plast Reconstr Surg*. 2010; 126(5): 1774-8.
 18. Kumar SP, Sisodia V. Evidence-based palliative care: role of palliative care journals. *Indian J Palliat Care*. 2013; 19(1): 76.
 19. Kumar SP, Sisodia V, Kumar A. Are Rehabilitation Journals doing what they are supposed to do? A Critical Review. *Int J Health Rehab Sci*. 2013; 2(3): 152-6.
 20. Kumar SP, Sisodia V, Kumar A. Manual Therapy Journals' Contribution to Evidence-Base in Manual/ Manipulative Physical Therapy- a Quantitative Trend Analysis of Articles. *International Journal of Health and Rehabilitation Sciences*. 2013; 2(2): 98-108.
 21. Truog RD, Arnold JH. The "ethics of evidence" and randomized controlled trials. *J Clin Ethics*. 1992 Spring; 3(1): 65-7.
 22. Jamwal NR, Kumar SP. Unearthing Evidence from the Holy Grail: What does Quantitative Analysis of Articles in PubMed Implicate Medicine and Health Sciences? *Indian J Med Health Sci*. 2016; 3(1): 5-7.
 23. Kumar SP, Sisodia V, Kumar KV. PubMed as an Altar of Science: Status of Current Evidence from a Quantitative Synthesis of Articles from 1970-2010. *Indian J Med Health Sci*. 2014; 1(1): 15-23.
 24. Kumar SP. Establishing evidence from practice: Can status of current practice inform future decision-making? Use and misuse of practice-based evidence in Physical therapy. *J PhysTher*. 2012; 4(2): 45-9.