

Research productivity of Indian physiotherapists – a review of MEDLINE

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Scientific output analysis of the current research productivity of physiotherapists will allow the construction of baseline indicators in this area of knowledge and professional practice. This study aims to analyse the research productivity of Indian physiotherapists in terms of quantity and examines the trends of all types of studies published. MEDLINE database was searched to identify researches published by Indian physiotherapists during the period between January 2000 and May 2014. There is an overall upward trend in the output of Indian researchers in physiotherapy and a substantial increase is seen in the last 5 years. To advance the growth of physiotherapy, it is essential to demonstrate that physiotherapy interventions are of high quality and cost-effective. However, studies evaluating the physiotherapy treatment regime and healthcare cost of rehabilitation are lacking. Hence, Indian physiotherapists are encouraged to conduct primary researches focusing on developing cost-effective management strategies relevant to Indian context.

Keywords: India, MEDLINE, physiotherapy, research.

THE number of publications is considered as an indication of the scientific output of a group. Research productivity of different groups has increased tremendously over the years, worldwide and in India. Scientific research in health science can improve clinical practice, to make it more evidence-based^{1,2}. Research productivity can also be an indicator of performance of a university³⁻⁵, maturation of a profession⁶ and identifying areas which need for research and fund allocation. Research in physiotherapy can contribute to the growth of the profession through making significant contributions to the body of knowledge, validating its current practice and thereby helping the community.

Researchers have stressed the importance of understanding research productivity of physiotherapists⁶⁻⁸. Physiotherapy research productivity around the world is well documented⁶⁻⁹. Analyses of published research in peer-reviewed physiotherapy journals can reflect the current state of affairs and some likely future trends⁶. Several bibliometric studies show evolving trends in physiotherapy research publication^{6,8-10}. Earlier trend indicated greater focus on non-clinical than clinical topics⁸. Current trend indicates that there is an increased emphasis on publishing clinically based research articles⁶, random controlled trials (RCTs), systematic reviews and

clinical practice guidelines¹⁰ consistent with evidence-based practice.

For the physiotherapy profession to grow and mature in developing countries like India, we need more clinically relevant and patient-centred research. Locally relevant research for the community is also required^{2,10,11}. Physiotherapy is an established profession in India, with most of the universities awarding Master's (MPT) as the highest degree in the discipline and few universities awarding Ph D degree as well, which has led to growth of research in physiotherapy. Research done in health science needs to be published in a peer-reviewed journals and indexed in a respectable database like MEDLINE¹². However, not much is known about research productivity of Indian physiotherapists. Scientific output analysis of the current research productivity of physiotherapists will allow the construction of baseline indicators in this area of knowledge and professional practice⁹. This study aims to analyse the research productivity of Indian physiotherapists in terms of quantity and examine the trends of all types of studies published.

Methods

Eligibility and search methods

The following criteria were used for the study:

1. Studies done in Indian setting with at least one of the investigators being a physiotherapist.

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2. Research within the framework of the definition of physiotherapy as defined by world confederation for physical therapy¹³.
3. Original research publication (letters to editor and other communications (editorials) were excluded).

We chose MEDLINE database for selecting relevant studies for the following reasons: (1) It covers over 5600 worldwide biomedicine and health journals¹⁴. (2) It covers all journals identified as core journals of physiotherapy interventions¹⁵. (3) It provides institutional affiliation and location for the first author.

The MEDLINE database was searched using the key terms 'India', 'Indian' AND 'Physiotherapy', limited to the publication year from 1 January 2000 to 31 May 2014, language 'English'. As many schools have started Master's degree and Ph D programmes in the last decade, we started our search from the beginning of the year 2000. For searching in PubMed, we used affiliation field 'India' to eliminate bibliographic citations from foreign countries. This search method was chosen in consultation with the help desk of PubMed (pers. commun.) to retrieve studies done in India.

Data extraction

First and second author independently reviewed the abstracts in an unblinded standardized manner, identified eligible studies and removed duplicates. Disagreements were resolved by discussion between the two review authors; if no agreement could be reached, to consult third author. Studies were screened for the presence of physiotherapy author and the authors affiliations listed for the article in MEDLINE or at the journals page. Included studies were then coded and analysed for the nature and characteristics of the study. We used the coding strategy developed by Coronado *et al.*⁶, which includes the following domains: type of article, type of research design, type of participants, purpose of the study, physiotherapy focus, and clinical condition. We coded all articles in all domains; the definition of coding and domains is given elsewhere⁶.

For type of article, we coded all the articles as experimental, descriptive, observational and topical review. The research design of an article was coded using the research design tree published by Coronado *et al.*⁶. Using this tree a study would be coded as topical review which could be further classified into systematic or non-systematic review; experimental study into randomized control trial or cross over trial. Observational and descriptive studies were classified as: survey, cross-sectional study, prospective study, retrospective study, case series, case report and qualitative study.

To determine the relevance of a study to clinical practice, we used 'type of participants' domain to ascertain

the profile of the sample studies, i.e. whether studies were done on symptomatic or asymptomatic individuals. 'Physiotherapy area of focus' refers to the type of clinical population studied. Depending on the population studied, it was coded as musculoskeletal, neurology, integumentary and cardio-pulmonary. Purpose of the study was coded as anatomy and physiology, aetiology, treatment, diagnosis, prevention, metric, quality improvement, and economics. In addition, as India is a diverse country, the first author's affiliation and region were coded to find out the contribution from different geographical regions of the country. Region of the first author's affiliation was coded as north, south, east west and north east of India.

Results

A total of 209 research publications were identified as eligible, i.e. original research published by Indian physiotherapists for work done in India (Figure 1). The first published article with an Indian physiotherapist author was in 2004 (ref. 16). Twenty-seven studies were published in the first 5 years (2004–2009) and 182 articles (87.1%) were published in the next 5 years (2010–2014) (Figure 2). Out of 209 articles, 69 articles were experimental, 61 observational, 52 descriptive studies and 27 topical reviews. Among the 27 topical reviews, majority (22) were non-systematic reviews, whose number is showing a small increment each year (Figure 3). Also, 108 studies were done on adult symptomatic individuals; symptomatic children only in 13 studies and in 31 reviews did not recruit any samples (Figure 4).

Data on published studies showed that the southern region accounted for 55.1% (113), followed by the north 31.1% (65). The top 5 research institutions were: (1) Department of Physiotherapy, Manipal University, Karnataka (59, 28.2%); (2) Department of Sports Medicine and Physiotherapy, Guru Nanak Dev University, Punjab (20, 9.6%); (3) Srinivas College of Physiotherapy and Research Centre, Karnataka (9, 4.3%); (4) KLE Institute of Physiotherapy, KLE University, Karnataka (5, 2.4%) and (5) Department of Physical Medicine and Rehabilitation, Christian Medical College, Tamil Nadu (5, 2.4%). The remaining 132 (63.1%) articles were published by different institutions (Figure 5).

The main purpose of the present study was treatment 52.6% ($n = 110$) followed by studies on anatomy and physiology 18.6% ($n = 39$) (Figure 6). The common area of focus in the study undertaken was musculoskeletal physiotherapy practice ($n = 97$) followed by neuro-physiotherapy ($n = 59$), cardio-respiratory ($n = 40$), integumentary ($n = 9$) and physiotherapy practice ($n = 4$). The clinical conditions which were common included: low back pain ($n = 18$), cancer ($n = 16$), stroke ($n = 14$) and normal subjects ($n = 36$).

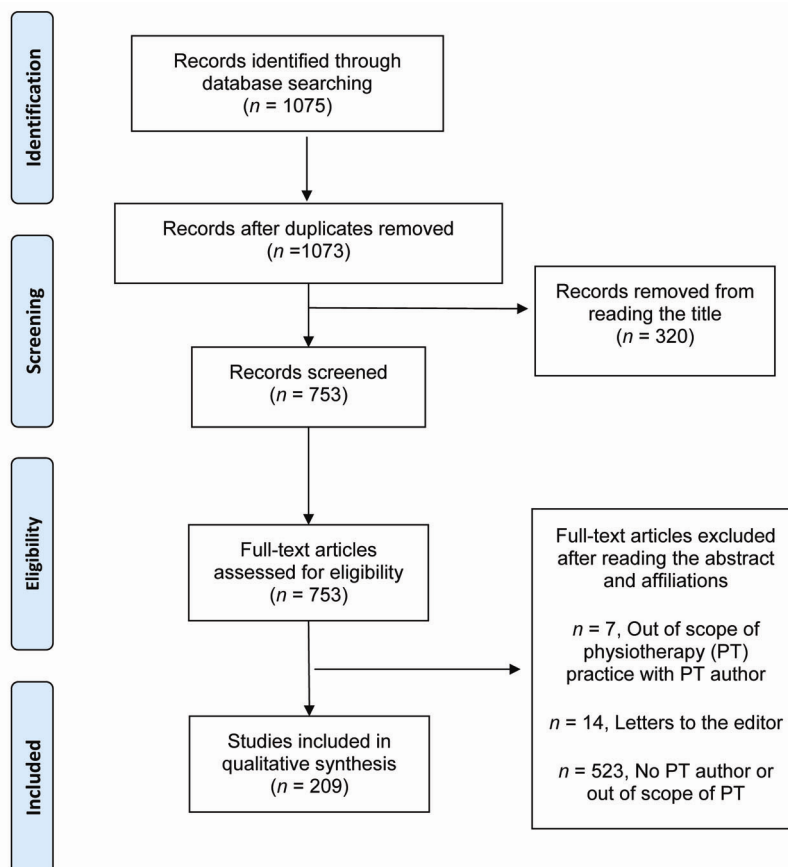


Figure 1. Extraction pathway of studies done by Indian physiotherapists from PubMed.

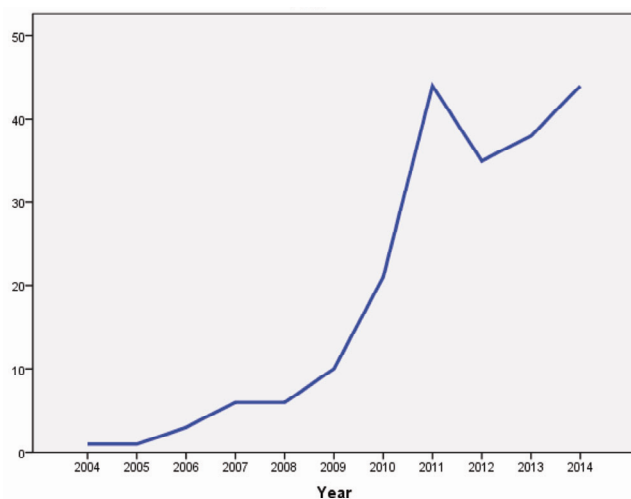


Figure 2. Trend in the number of papers published each year (up to July 2014).

Discussion

There is an overall upward trend in the output of Indian researchers in physiotherapy and a substantial increase is seen in the last 5 years. Majority of the research is from

two institutions with Ph D programme: Manipal University and Gurunanak Dev University, located in the south and north of India respectively. Increase in physiotherapists with doctoral degree and starting doctoral programmes in many institutions might be one of the contributing factors for increase in research output in recent years. Increasing trend in scientific production has been predicted to increase overall in medical science and technology in India^{17,18}, which was also noted in this study.

The numbers are small to notice clear trends in research output, but majority of the studies have dealt with treatment which can be considered as valuable in clinical practice. However, the number of non-systematic reviews shows an increasing trend in recent years. These are not considered as ‘best’ evidence for clinical practice; hence researchers should concentrate on systematic reviews which can be valuable. Research on anatomy and physiology, especially done with normal subjects may be avoided as they have limited use in clinical practice.

To advance the growth of physiotherapy, it is essential to demonstrate that physiotherapy interventions are of high quality and cost-effective⁸. Also, primary research in the Indian context is important to develop context-specific evidence and for developing cost-effective management strategies. Hence analyses of cost-effectiveness

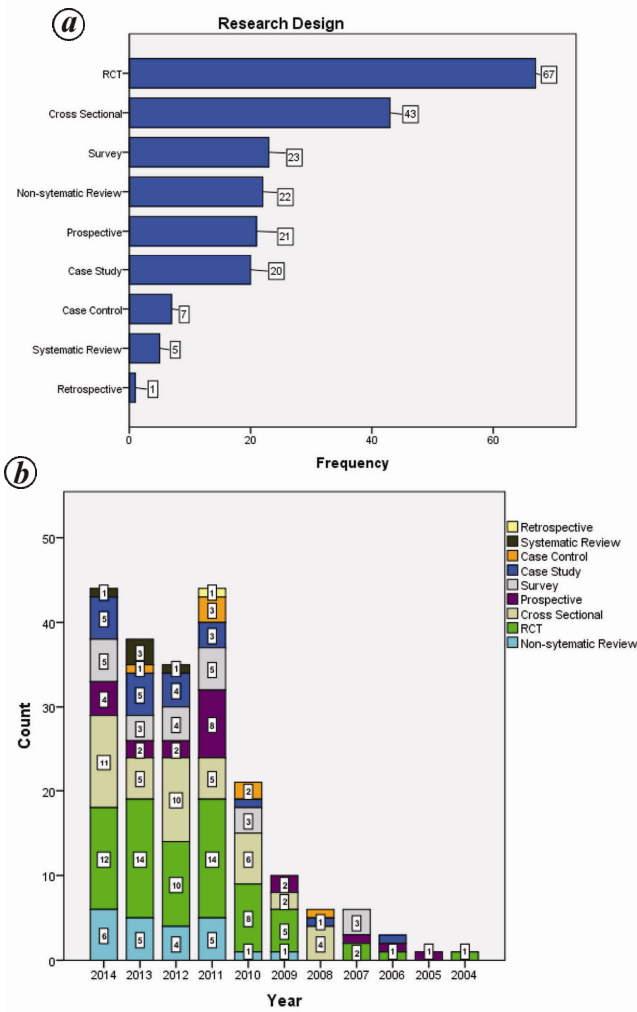


Figure 3. Frequency (a) and yearly trends (b) of articles based on research design.

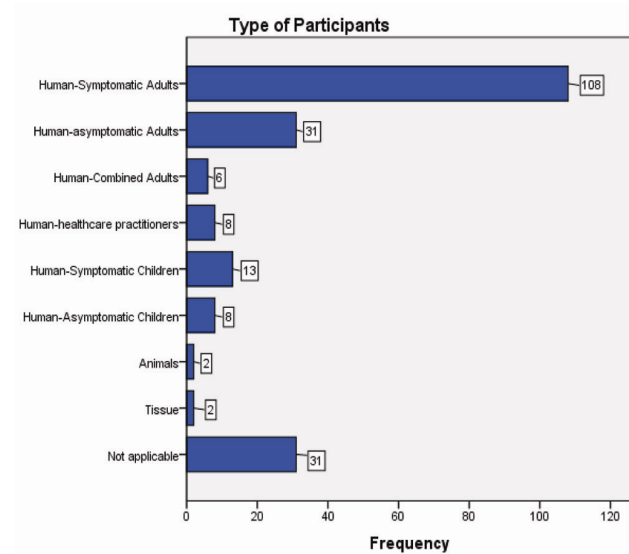


Figure 4. Frequency of type of participants.

of physiotherapy management are vital¹⁹, especially in a country like India. But, studies which focus on evaluating the healthcare cost of rehabilitation or physiotherapy treatment regime are lacking. Studies on the cost-benefit of physiotherapy services can help the Government allocate funds and reduce the burden of illness.

Compared to other developing countries like Brazil⁹, the productivity of Indian therapists is considerably low. Lack of solid research tradition in allied health science like physiotherapy can be one of the important factors². Numerous barriers and facilitators have been identified, ranging from individual factors to external factors to research in medical science^{2,20-22}. Physiotherapy research productivity should be encouraged by understanding these facilitators and barriers, and device methods to improve them.

One of the limitations of the present study is that we only did publication count of studies published from MEDLINE. The database does not index several Indian physiotherapy journals as they do not fulfil the criteria for inclusion. Hence, it may not reflect the total number of publications by Indian physiotherapists. However, we believe that to be counted as serious research work it should be published in a reasonably good journal.

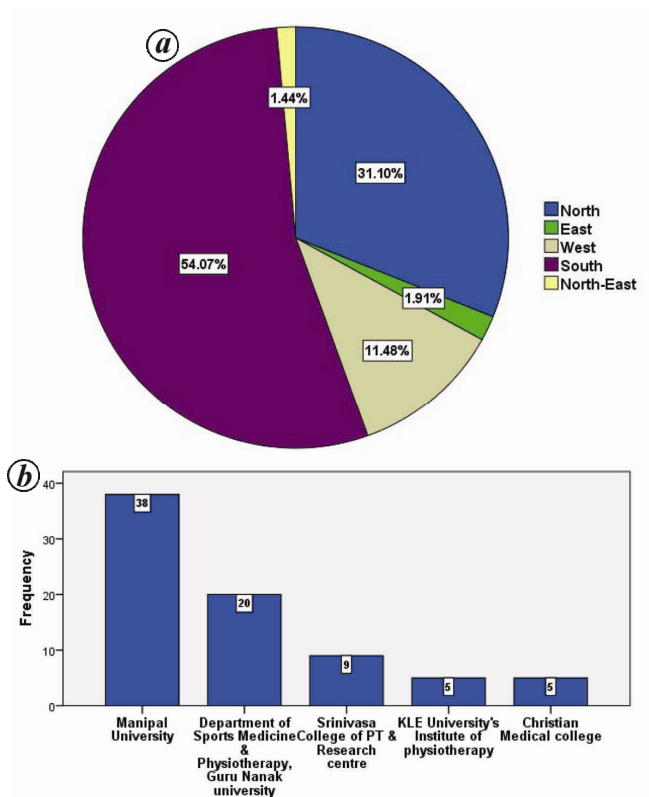


Figure 5. Frequency of number of articles based on (a) geographical region of India and (b) only the top five research institutions.

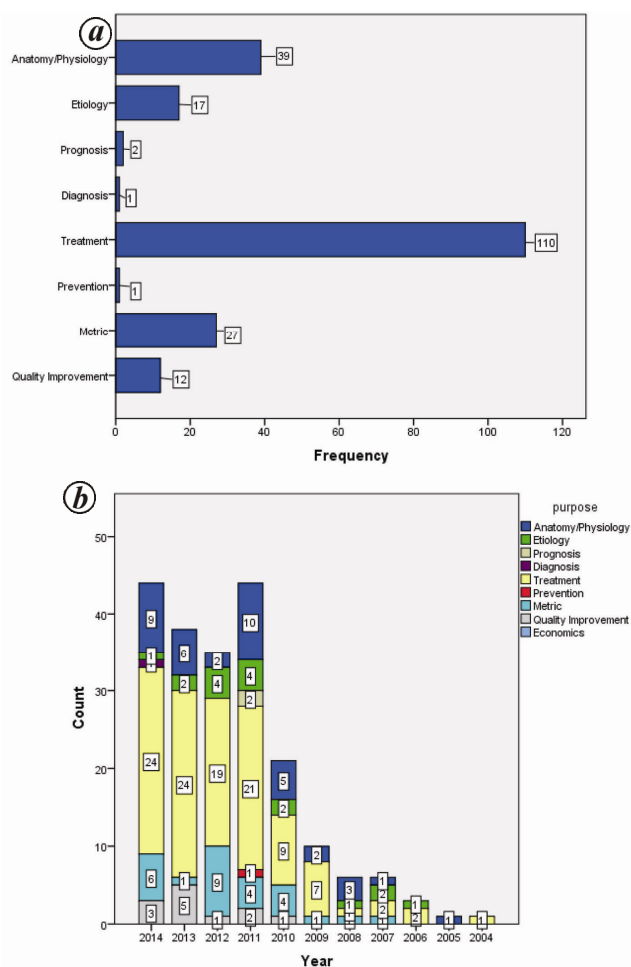


Figure 6. Purpose of articles: a, frequency; b, frequency based on yearly trend.

Conclusion

A gradual increase in research productivity in physiotherapy is observed, particularly in the last 5 years. This trend may be a reflection of growth of physiotherapy professionals in India. However, improving research output from institutions from all over India is necessary. Researches which are clinically valuable for patients and understanding the cost–benefit of physiotherapy services are vital.

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Received 13 January 2015; revised accepted 22 March 2016

doi: 10.18520/cs/v110/i12/2226-2230