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Where We Have Been and Where We Are Going: A Content Analysis of Articles Published in the Journal of Women's Health Physical Therapy From 2005 to 2015

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Abstract

Objective—The objective of this study was to examine the type and content of *Journal of Women's Health Physical Therapy* (JWHPT) publications over the last decade.

Study Design—Content and bibliometric analysis of published literature

Background—Component sections, such as the Section on Women's Health (SoWH) of the American Physical Therapy Association provide content expertise to areas of specialty physical therapist practice, thereby supporting the dissemination of evidence for physical therapists to use. Closely aligned with the mission of the SoWH, JWHPT provides evidence reflecting this practice area. The purpose of our analysis was to examine publications within JWHPT to determine how closely JWHPT is meeting the mission and focus of section members.

Methods and Measures—We used established bibliographic methodology to code and review manuscripts published online between 2005 and 2015 in JWHPT using established domains (article type, participant type, research design, study purpose, and area of focus). Total publications and proportion of publications based on domain were described. Impact by citation and author was examined using bibliometric software.

Results—Eighteen percent of the items published in JWHPT were original research papers submitted for the first time. Of those papers, the primary study design was cross-sectional experimental research, most commonly studying interventions. The primary practice area reported was management of incontinence.

Conclusions—We suggest that a continued need to increase efforts for the submission and publication of a greater proportion of randomized controlled trials and metric articles.

INTRODUCTION

The profession of physical therapy has undergone remarkable transformation in the past two decades.^{1,2} Important and substantial changes have occurred to the level of education of

physical therapists.^{3,4} Advanced postgraduate clinical education opportunities through accredited residency and fellowship programs have shown a dramatic rise in number since 1999. Simultaneously, practice in health care has emphasized the use of the best available evidence in patient management.⁵

Component sections of the American Physical Therapy Association (APTA) provide content expertise to areas of specialty physical therapist practice, thereby supporting the dissemination of evidence for physical therapists to use.⁶ The specialty journal of a component section of the APTA provides a forum to disseminate the best evidence for practice for both clinicians and researchers. In addition, the papers published in the journal are intended to reflect the practice and patient population that are the focus of that section. Examining the literature associated with these areas of physical therapist practice is vital to establishing the evidence for the growing number of specializing clinicians.

Recent bibliometric analyses have examined the literature within specialty areas of physical therapist practice, including pediatrics,⁷ orthopaedic and sports medicine,⁸ and manual therapy.⁹ Svien et al.,⁷ for example, reviewed articles published in *Pediatric Physical Therapy*, the official journal of the Academy of Pediatric Physical Therapy of the APTA, and categorized each based on type, level of evidence, and topic area. From these data, the authors provided recommendations to enhance evidence-based practice in this specialization. Similarly, Coronado et al.,⁸ after analyzing publications in the *Journal of Orthopaedic and Sports Physical Therapy*, the official journal of both the Orthopaedic and Sports Physical Therapy Section of the APTA, suggested a continued need to increase efforts to publish more specialty-relevant randomized controlled trials and articles focused on diagnosis, prognosis, and metrics.

The Section on Women's Health (SoWH) is a specialty section of the APTA comprised of over 2,600 members that focuses on the clinical interests of physical therapists practicing in women's health and other health care providers working closely with physical therapists with the mission to "advance excellence in the physical therapist profession in women's and men's health globally through innovative education, research, and advocacy." (<http://www.womenshealthapta.org/about-us-sowh/>). Members of the SoWH treat male and female patients across the life span, from the young athlete and childbearing woman, to the perimenopausal woman and elderly man. As the only peer-reviewed publication of the SoWH, *Journal of Women's Health Physical Therapy (JWHPT)* has provided specialty members with evidence reflecting and advancing this practice area. Since specialty journals of APTA sections are managed under similar but unrelated systems, it is unclear whether content focus or trends in JWHPT reflect patterns that have been observed in other specialty physical therapy journals.⁷⁻⁹

The purpose of our analysis was to examine publications within JWHPT from 2005 – 2015 to determine how closely JWHPT is meeting the mission and focus of section members. In this study, we examined the types of participants enrolled in studies published by JWHPT, the types of study designs utilized, areas of specialty practice and focus areas of articles published in the journal. This analysis served to identify trends over the past decade. We also

examined the professional background and qualifications, and frequency of publication by authors over the past decade.

METHODS AND MEASURES

Content Analysis

Eligibility Criteria—All manuscripts published online between 2005 and 2015 on the website of *Journal of Women's Health Physical Therapy* (JWHPT) (<http://journals.lww.com/jwhpt/>) were screened by two authors (MJA, ADH). For inclusion in the subsequent analysis, the paper had to be defined as a research report, topical review or case report/case series as defined in the criteria by Coronado et al.¹⁰ A total of 566 potential publications were screened with 100 (17.7 %) articles meeting inclusion criteria for use in addressing the primary aim. Articles classified as conference abstracts, article summaries, book reviews, editorials, reprints, conference calendars, product reviews, Women's Health news, research forums, guidelines, conference proceedings, year-end summaries, article commentaries, errata, recognition of reviewers, and author responses were excluded. TABLE 1 lists the type, number, and percent of articles included and excluded from this bibliometric analysis. Articles classified as research reports, topical reviews, or case reports/series were included for further analysis. Uncertainty regarding inclusion was resolved by discussion and consensus after review by a third reviewer (MDB).

Coding System—We utilized and adapted the coding strategy developed by Coronado et al.¹⁰ to characterize studies published in JWHPT. The primary domains were: type of article, type of participants, type of research design, clinical condition, specialty practice area, and focus of article. The primary domains of type of article, type of participants, and type of research design were consistent with the original code.¹⁰ However, we adapted the domains of specialty practice area and focus of article to better match JWHPT. Coding for specialty practice area included options for incontinence, pelvic pain, chronic pain, pregnancy-related pain, other pregnancy-related conditions, lymphedema, osteoporosis, menopause, the female athlete, research methods and a category for other. Coding for focus of article included options for anatomy, epidemiology, diagnosis, intervention, prognosis, prevention, measurement and quality assurance. Only one domain code could be selected for type of article, type of participants, practice area, and research design. A maximum of two codes could be selected for focus of article. Open data entry was used for clinical condition.

In contrast to previous studies,^{8–10} we coded participants/subjects studied for all articles (including reviews) in order to provide a comprehensive report. Additionally we collated the varying professional and clinical credentials (i.e. specialization) of the authors submitting to JWHPT as well as any terminal academic degrees.

Reliability of the Coding System—The studies by Coronado and colleagues^{8–10} have established good inter-tester agreement for the coding system. In this study, we conducted 3 separate inter-tester reliability trials, similar to those described previously. Two blinded reviewers (MJA and MDB) coded articles for the domains of type of article, type of participants, type of research design, and focus of article. Prior to the reliability coding, all authors met to review and refine the coding system as needed. Open communication

between each reviewer and the primary author was allowed, but coding between the reviewers was blinded. Percentage agreement, kappa value, and 95% confidence interval for kappa were calculated from the combined data of the second and third reliability trials. After the initial 10 papers were reviewed, agreement was above 80% for each category except type of participants and focus of article. After discussion, definitions were revised and the analysis was repeated. Agreement remained below 80% for focus of article. The limited agreement resulted from several articles having more than one focus area (e.g. a topical review describing anatomy, epidemiology, and treatment). Definitions were again revised and metrics developed to aide in identifying the primary focus for each paper. Reviews were performed on an additional set of papers with agreement greater than 80% after the third discussion.

Citation Analysis

Citation analysis of the included articles was performed using Harzing's Publish or Perish 4 Software (Tarma Software Research Ltd¹¹). This software provides citation analysis of articles indexed in Google Scholar. A search of articles published in JWHPT was conducted in the Publish or Perish 4 software and cross-referenced with the final list from the content analysis. All articles included in the content analysis of this study were able to be identified within the software and analyzed. Journal citation metrics included the average number of citations per article and h-index. The journal h-index was used as a measure of cumulative impact of research output.¹² The h-index is determined by examining the highest cited articles and noting how many (h) articles have at least (h) number of citations. For example, a journal with an h-index of 5 has 5 articles cited at least 5 times. The top 10 individual articles published in the journal and contributing institutions were also identified.

Data Analysis

We used IBM SPSS Statistics 23 (IBM Corp, Armonk, NY) for statistical analyses. Descriptive statistics were generated for all categorical data. Data across all categories were examined for yearly monotonic trends using simple correlations.

RESULTS

A total of 100 articles, from 2005 until 2015, were included in this analysis. The mean number of articles per year was 9.1 with peak articles published in 2012. The type of studies published and the research designs used are detailed in TABLE 2. Research reports were the primary type of article published comprising 55 of the 100 total articles, while topical reviews and case reports totaled 22 and 23 articles, respectively. The most common research designs used case report/series format (24%), cross-sectional research designs (17%) or were survey-based research (14%). Only four studies were randomized controlled trials of interventions. Reviews were primarily non-systematic and narrative (14%). There were no significant trends over the decade related to study type or study design ($p > 0.05$).

For participant type, the majority of articles used clinical participants (52%) and 29% of articles used healthy participants (TABLE 3). Over the decade, there was an increasing trend, although non-significant, for the number of studies including clinical participants

($r=0.47$, $p=0.14$), while those including healthy participants decreased ($r=-0.42$, $p=0.19$) (FIGURE 1). Of the 100 articles reporting the sex of the participants, 92% reported females as the focus, 3% studied males, and 5% included participants of both genders. The vast majority of participants included were adults over 18 years of age (84%).

The area of specialty practice most studied over the review period was management of incontinence (21%), followed by the pregnancy-related pain and other pregnancy issues (19%) and pelvic pain (16%) (FIGURE 2). The focus of the majority of studies during this period was on interventions (47%) (FIGURE 3). There was no significant trend in areas of specialty practice or focus ($p > 0.05$).

Two hundred fifty seven unique contributing authors were identified within the review period. The majority of the contributing authors were physical therapists (88.4%). Of these, 80 listed their credentials as Doctor of Physical Therapy (DPT). Other disciplines represented included medicine (8%), occupational therapy, nursing, psychology, and dietetics. Five student physical therapist authors (2%) were also represented during the review period. One hundred fourteen authors listed terminal academic doctorate degrees. Clinical specializations in physical therapist practice held by the authors represented seven areas of practice with orthopedic specialization being the most frequently reported (46%) followed by specialization in women's health (18%).

There was an average of 2.38 citations per article over the 11-year period. The journals h-index was 8 indicating that 8 articles were cited at least 8 times. The top 10 cited articles are listed in Table 4 and the originating institutions in Table 5. No international institutions were in the top 10 contributors, but two contributions came from each of the following: Centre for Pelvic Health (Canada); University of British Columbia (Canada); and University of Puerto Rico (Puerto Rico).

COMMENT

The primary purpose of this analysis was to characterize the work published by JWHPT from 2005–2015. To that end, JWHPT articles were examined through content and bibliometric analysis over the past decade and related to the mission and goals indicated for the section and the journal.

The number of original studies published varied tremendously ranging from a low of 5 in 2009 to 14 in 2012, with a mean of approximately 10 original studies published per year across the decade. Research reports made up the largest proportion of article type in the journal. The total proportion of research reports (55%) is a bit lower than other section journals of the APTA, which show a greater than 65% makeup of research reports.^{7,8} Examination of yearly breakdown of type of article shows that research reports, in general, maintained the largest representation compared to both reviews and case studies combined. Based on these data, JWHPT appears to attract submission of primary research papers and maintains a focus on empirical evidence for supporting women's health practice. There were no trends, however, noted for changes in the types or rigor (that is, increasing) of experimental designs used in studies with cross-sectional design and survey-based research

methodologies being the most prevalent methodologies. These data are somewhat surprising as the major focus area within JWHPT is intervention studies. This may mean that intervention studies published in JWHPT are not commonly randomized trials, but a lower level type of evidence. Given the low proportion of these types of publications, there may be a need to encourage the submission and publication of high-quality randomized controlled trials if this area remains an area of focus for the JWHPT.

The proportion of case report/series and reports remained constant over time and case reports were the most common type of study over the last five years. Mahajan and Hunter¹³ indicate that case reports/series are often the most commonly read type of article, yet they are rarely among the most cited. Furthermore, Patsopoulos et al.¹⁴ suggested case reports have a small impact in health science literature based on number of times cited. While often regarded as a lower level of evidence, case reports/series have a role in the progress of science as this format permits discoveries of new diseases and unexpected effects (adverse or beneficial) in addition to playing an important role in education.¹⁵ There was little evidence from the current analysis to suggest that case reports had spurred larger, more rigorous studies, or if so, these studies were not published in JWHPT.

There was an increasing trend for studies including patients with clinical conditions over the review period with the majority of participants being symptomatic women, while children and men participated in few studies. We view this, albeit non-significant, shift from asymptomatic to symptomatic participants as a positive indication of the focus on clinical management of patients with emphasis on conditions pertinent to specialty section members. This is not to suggest that studies of wellness and prevention, which commonly include asymptomatic individuals, would not be of great value, but the emphasis on wellness and prevention is a more recent professional development in the APTA and would be unlikely to be reflected in publications in the past decade. The other pertinent finding related to analysis of participant characteristics is the small number of manuscripts related to children, adolescents and men. This finding is inconsistent with the mission of the SoWH, “to advance excellence in the physical therapist profession in women’s and men’s health globally...” Though the mission of the SoWH was adopted more recently than JWHPT’s mission, the lack of consistency between these missions may explain the scarcity of publications involving men and children.

When we examined the contributors to JWHPT we noted that physical therapists with advanced research degrees were the primary contributors. Other collaborating professions such as medicine and nursing were represented, but in very low numbers. Similarly, the number of publications from international authors was very low. This finding is not unique to JWHPT as a much smaller representation of leading international institutions was found in *Physical Therapy* and JOSPT.^{8,10} Part of the mission of the SoWH is to advance practice globally for men and women across the lifespan. The combination of these findings indicate that the JWHPT may need to focus on submissions specific to these areas to better meet the mission of the SoWH. Another interesting result was related to the credentials of the contributing authors with physical therapy degrees; the number of board certified orthopedic specialists outnumbered the number of women’s health board certified specialist authors. At first glance, this may be surprising given the content of JWHPT. However, board

certification in women's health physical therapy has only been available since 2009 and to date has 333 board certified specialists compared to the 11,730 board certified orthopedic specialists with an exam that has been administered since 1989.

A citation analysis provides the frequency with which certain authors and publications are cited. The results of such analyses provide measures of impact of individual publications. Among the top 10 most commonly cited JWHPT papers were three papers related to rectus diastasis. Additional papers that were highly cited in the journal were clinically focused toward diagnosis or treatment. These are not surprising, especially for a younger subspecialty. Other types of papers that are highly cited in physical therapy-related literature include psychometric and statistical papers.^{8–10} These papers provide the foundation for measurement tools and analytical methods used in a variety of practice areas. The current findings show a low representation of metric studies within JWHPT, similar to findings from *Physical Therapy* and JOSPT. The publication of reports dedicated to measurement and analytical methods may yield greater impact for clinicians and researchers in this area.

CONCLUSION

JWHPT serves as the primary journal for specialist clinicians and researchers with a focus on women's health and is the official journal of the SOWH of the APTA. Findings from our analysis suggest modest increases in percentage of clinically relevant research studies published over the past decade. While the optimal proportion of publication types for a given journal is unknown, we suggest continued need to increase efforts for the submission and publication of a greater proportion of randomized controlled trials and metric articles. Potential strategies that might be considered in effort to meet some of the areas identified in this bibliographic analysis may include collaborations with the journals of other areas of specialty practice such as the Academy of Geriatric Physical Therapy or the Sections on Pediatrics and Oncology, or special issues of the JWHPT with a focus of measurement.

Limitations

This manuscript only included articles from 2005–2015 that were available electronically. The JWHPT has been published since 1997. Therefore, our analysis was limited to these 11 years and may not be reflective of the entire publication history of JWHPT.

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Figure 1.
Trends in participant types included in research studies over the review period.

Figure 2.

Area of specialty practice. 'Other' included breast cancer, breast feeding, carpal tunnel, exercise and fitness, hypermobility, modalities, obesity, research methods, self-efficacy, sleep and stress. 'Pregnancy – other' included Diastasis recti abdominis.

Figure 3.
Area of focus.

Table 1

Summary of Articles Included and Excluded

Total articles*	566	(100%)
Articles excluded	466	(82%)
CSM Abstracts	236	(42%)
Article summaries	67	(12%)
Book review	48	(8%)
Editorial	37	(7%)
Reprints	11	(2%)
Conference calendar	11	(2%)
Product Reviews	11	(2%)
Women's Health News	10	(2%)
Research Forum	8	(2%)
Guidelines	6	(1%)
Conference proceedings	5	(1%)
Year end summary	5	(1%)
Article commentary	3	(1%)
Errata	3	(1%)
Recognition of reviewers	3	(1%)
Author response	2	(0%)
Articles included	100	(18%)

Table 2

Type of article

	Research	Topical	Case	Total
2005	4	6	0	10
2006	3	4	2	9
2007	5	1	1	7
2008	4	2	1	7
2009	3	1	1	5
2010	6	0	2	8
2011	5	1	1	7
2012	8	3	3	14
2013	8	0	4	12
2014	4	3	5	12
2015	5	1	3	9
TOTAL	55	22	23	100

Table 3

Targeted population of the article

	Adult				Children				Tissue	None	Practitioner
	Clinical	Healthy	Both	Clinical	Healthy	Both	Clinical	Healthy			
2005	3	2	2	0	1	0	3	0	0	0	1
2006	3	6	0	0	2	0	0	0	0	0	0
2007	4	1	1	0	0	0	0	0	0	0	1
2008	2	2	0	1	0	0	0	0	1	1	1
2009	4	1	0	0	0	0	0	0	0	0	0
2010	3	2	0	0	1	0	0	0	0	0	3
2011	3	3	0	0	0	0	0	0	0	0	1
2012	7	3	1	0	0	0	1	0	1	0	2
2013	6	3	2	0	0	1	1	1	0	0	0
2014	9	1	2	0	0	1	0	0	0	0	0
2015	4	1	0	0	0	0	1	1	0	0	0
TOTAL	51	25	8	1	4	2	6	1	1	9	

Table 4Top 10 most cited articles published in *Journal of Women's Health Physical Therapy*.

Article	Topic	Citations [*]
Chiarello CM, et al. The effects of an exercise program on diastasis recti abdominis in pregnant women. 2005 Vol 29, Issue 1.	Diastasis recti abdominis	36
Parker MA, et al. Diastasis rectus abdominis and lumbo-pelvic pain and dysfunction-are they related. 2009 Vol 33, Issue 2.	Diastasis recti abdominis	19
Donahoe-Fillmore B, et al. The effects of a home Pilates program on muscle performance and posture in healthy females: a pilot study. 2007, Vol 31, Issue 2.	Pilates	15
Strauhall MJ, et al. Vulvar pain: a comprehensive review. 2006, Vol 31, Issue 3.	Vulvar pain	11
Hilton S and Vandyken C. The puzzle of pelvic pain—a rehabilitation framework for balancing tissue dysfunction and central sensitization, I: pain physiology and evaluation for the physical therapists. 2011, Vol 35, Issue 3.	Pelvic pain	11
Trudelle-Jackson E, et al. Clinical implications for muscle strength differences in women of different age and racial groups: the WIN study. 2011, Vol 35, Issue 1.	Muscle strength	10
Dockter M, et al. Prevalence of urinary incontinence: a comparative study of collegiate female athletes and non-athletic controls. 2007, Vol 31, Issue 1.	Urinary incontinence	9
Donahoe-Fillmore, et al. The effect of yoga postures on balance, flexibility, and strength in healthy high school females. 2009, Vol 34, Issue 1.	Yoga	9
Hagen L and Wong CK. Gait in pregnant women: spinal and lower extremity changes from pre- to postpartum. 2010, Vol 34, Issue 2.	Gait and pregnancy	8
Keeler J, et al. Diastasis recti abdominis: a survey of women's health specialists for current physical therapy clinical practice for postpartum women. 2012, Vol 36, Issue 3.	Diastasis recti abdominis	8

* Citations from Google Scholar.

Table 5Top 10 Most Represented Institutions in Articles Published in *Journal of Women's Health Physical Therapy*

Rank	Institution	State	N (%) of Articles
1	Texas Women's University	Texas	8 (3.7)
2	University of Mary	North Dakota	5 (2.3)
	University of Wisconsin-Madison	Wisconsin	5 (2.3)
4	Duke University	North Carolina	4 (1.9)
	Mayo Clinic	Minnesota	4 (1.9)
	Stockton University *	New Jersey	4 (1.9)
7	Columbia University	New York	3 (1.4)
	Marywood University	Pennsylvania	3 (1.4)
	Misericordia University	Pennsylvania	3 (1.4)
	NovaCare Rehabilitation	New Jersey	3 (1.4)
	Shenandoah University	Virginia	3 (1.4)
	Thomas Jefferson University	Pennsylvania	3 (1.4)
	University of Dayton	Ohio	3 (1.4)

* Formerly known as Richard Stockton College of New Jersey