
Mapping the literature of occupational therapy

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Occupational therapy, formally organized in the United States in 1917, is considered an allied health field. Mapping occupational therapy literature is part of a bibliometric project of the Medical Library Association's Nursing and Allied Health Resources Section's project for mapping the literature of allied health. Three core journals were selected from the years 1995 and 1996 and a determination was made of the extent to which the cited journal references were covered by standard indexing sources. Using Bradford's Law of Scattering three zones were created, each containing approximately one-third of the cited journal references. The results showed that three journals made up the first zone, 117 journals the second, and 657 the third. The most cited journal was the *American Journal of Occupational Therapy*. In the second zone, journals from twelve disciplines were identified. While MEDLINE provided the best overall indexing, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) was the only database that indexed the three most cited journals plus nine of the currently active titles in occupational therapy. MEDLINE could improve its coverage of occupational therapy by indexing the journals of the British, Canadian, and Australian national associations.

INTRODUCTION

This study is part of the Project for Mapping the Literature of Allied Health sponsored by the Nursing and Allied Health Resources Section (NAHRS) of the Medical Library Association, which was first described in 1997 by Schloman [1]. Occupational therapy has been part of the group of professions related to health and medicine for many years. It has been routinely covered in the Brandon/Hill "Selected List of Books and Journals in Allied Health" [2]. The profession has also been associated with medical rehabilitation.

Occupational therapy was formally organized in the United States in 1917 in Clifton Springs, New York [3]. Originally the organization was named the National Society for the Promotion of Occupational Therapy but was changed in 1921 to the American Occupational Therapy Association (AOTA). The term "occupational therapy" was suggested by one of the founders, George Barton, an architect, in 1914 [4]. Barton hoped that for every occupational disease there would be a corresponding occupational therapy and cure. Although the relationship between disease and cure did not occur as Barton envisioned, the name has remained.

The origins of occupational therapy began with per-

sons who were mentally ill and later those with tuberculosis. In particular, the work of William Tuke, founder of The Retreat in York, England, and other Quakers had a significant role in developing the basic tenets of occupational therapy in America [5]. Moral treatment, as developed by Tuke and others was designed to address "moral insanity" by teaching the morally insane how to live a moral life. Staff lived with the patients twenty-four hours a day, taught lessons, and showed by example how to live and work in the moral, humane, and humanistic environment provided within the institution.

Dr. Adolph Meyer, a psychiatrist, organized the first set of concepts about occupational therapy as a specific approach for treating patients [6]. He suggested that problems in mental health were often the result of disorganized habits of living in which the person did not have a good balance and rhythm of work, play, rest, and sleep. Meyer and Eleanor Clarke Slagle, a social service worker and founder of the profession, developed the Habit Training approach in which patients' activities and occupations were scheduled throughout the day according to their ability [7]. As improvement occurred, the patients were expected to perform more skills until they could resume living in the community according to socially accepted standards.

Another strong influence on occupational therapy was the Arts and Crafts Movement developed in England by John Ruskin but implemented by William Morris. The Arts and Crafts Movement in America, which flourished from 1880 to 1920, contributed the therapeutic concepts of promoting individuality into self-esteem and purposeful action into the performance of daily life tasks [8]. In addition the philosophy of pragmatism, as organized by John Dewey and William James, provided occupational therapists with a practical approach to solving patients' problems in everyday living [9, 10]. Education of occupational therapy personnel began in 1906 when Susan E. Tracy, a nurse, first gave lectures on invalid occupations to nurses of Adams Nervine Hospital in Boston [11]. Tracy also wrote the first textbook on occupational therapy [12]. Two years later, in 1908, a three-week course was given by the School of Civics and Philanthropy, a settlement house in Chicago with cooperation from members of Jane Addams staff at Hull House [13]. After World War I, the recommended length of a training program increased to one year. Beginning in 1931, a university degree was given at Milwaukee Downer College.

The AOTA was the first allied health profession to approach the American Medical Association (AMA) in 1931 about the possibility of jointly accrediting schools of occupational therapy. The relationship began formally in 1933 with the first set of requirements published in 1935 [14, 15]. In 1949, the minimum requirement for educational programs was a university degree [16]. There has been much discussion of, but no final action regarding, requiring a master's degree for basic entry into occupational therapy. Also, the relationship with the AMA has been discontinued. The AOTA accredits educational programs independently. In addition, the field has developed several doctoral level programs.

Formal education of the certified occupational therapy assistant (COTA) was approved in 1958 [17]. Originally the programs were one year in length, but the requirement was changed to two years. Educational programs for occupational therapy assistants may be in a variety of post-secondary settings, including technical or trade schools as well as community or junior colleges.

Education is important but not sufficient to practice occupational therapy. All fifty states, the District of Columbia, and Puerto Rico have some form of regulation such as licensure, certification, registration, or trademark protection. Some states with licensure require continuing education units or credits for relicensure.

Research has been a priority in occupational therapy since the first research project was completed in 1910 by Herbert J. Hall [18]. Progress in research efforts was slow, however, until 1965 when the American Occu-

pational Therapy Foundation was formed. One of the foundation's primary roles was to provide funding for research in occupational therapy. The funding provided the financial support needed to start many research projects and to build a history of research activities that enabled the researchers to compete successfully for research funds from the National Institutes of Health and other large foundations.

The growth of literature in occupational therapy was also slow for many years. Until 1980, there was only one primary journal published in the United States devoted to occupational therapy, although the specific journal changed from *Occupational Therapy and Rehabilitation*, published by Williams & Wilkins, to the *American Journal of Occupational Therapy*, published by AOTA beginning in 1947. In 1980, the journal *Occupational Therapy in Mental Health* began publication, and thereafter several other journals were started that rapidly increased the literature available about occupational therapy as a profession and its therapeutic applications. At the same time, the number of textbooks about occupational therapy began to increase rapidly as book publishers discovered there was market for textbooks in the allied health fields.

METHOD

The selection of journals in occupational therapy was based on breadth of coverage of the field in general as opposed to publication in a specific or narrow aspect such as pediatrics, mental health, or geriatrics. The intent was to provide a cross section of the literature referenced in occupational therapy while avoiding, if possible, skewing the cited references in any particular area of practice within the field. Therefore, three journals were selected that met the criteria of publishing across the field in practice, education, and research. All three are listed, along with three specialty journals and one news weekly, on the Brandon/Hill "Selected List of Books and Journals in Allied Health" [19]. Titles included the *American Journal of Occupational Therapy (AJOT)*, published by the American Occupational Therapy Association; the *Occupational Therapy Journal of Research (OTJR)*, published by the American Occupational Therapy Foundation; and *Occupational Therapy in Health Care (OTHC)*, published by the Haworth Press.

All cited references from the three journals were included for the years 1995 and 1996. Only references from articles were included. Excluded were references given in editorials and letters to the editor. A database was created to provide a numeric code for each cited item in the reference list, the type of format such as book or journal, the title of the reference source, and the year of publication. For journal citations, the specific journal title cited was also recorded.

Many types of cited references were identified in ad-

Table 1
Cited format types by source journal and total frequency

Cited format type	Source journal			Total	
	AJOT	OTJR	OTHC	No.	%
Books	1,598	242	266	2,106	26.1
Journals	3,809	487	643	4,939	61.2
Miscellaneous	1,796	100	127	1,023	12.7
Total	6,203	829	1,036	8,068	100.0

dition to books and journals. Other cited items included archive materials, audiovisuals, dissertations and theses, federal and state government documents, newsletters, newspapers, pamphlets, papers presented at conferences or workshops, policies and procedures of AOTA, surveys used in research studies, tests used for clinical assessment, and unpublished manuals or booklets used in workshops. Although the data from these sources was analyzed, they have been grouped together as "Miscellaneous" in the summary tables.

After all cited items were categorized, the cited journal titles were arranged in rank order based on the frequency of occurrence. Bradford's Law of Scattering was applied by dividing the ranked list into three equal zones based on the number of citations. Zone 1 represented the core journal literature in occupational therapy. Zone 2 represented journals that were frequent sources of information, while Zone 3 represented the group of greatest dispersion and the least productive sources of information.

For Zones 1 and 2, the journal titles were then checked against three databases to discern whether the journal was included. The lists of journals indexed from MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO were examined. Journals that changed title names or ceased publication before 1996 were noted with the continuing title or the date the publication stopped.

RESULTS

The total number of articles from the three journal sources published in 1995 or 1996 was 294. The total number of items cited in the references was 8,068. The

overall average number of cited items per article was 27.5. The average number of cited references in the *Occupational Therapy Journal of Research* was slightly higher than the overall average at 28.6. The average number in the *American Journal of Occupational Therapy* was slightly lower than the overall average at 26.9. The number in *Occupational Therapy in Health Care* was closest to the overall average at 27.3.

The number of cited references from books, journals, and miscellaneous sources is summarized in Table 1. Cited references to journals comprise 61% of the total. Cited references to books comprise 26%. All miscellaneous items total 13%. Of interest within the category of "Miscellaneous" is the percentage of cited references (2.5%) to test instruments for assessment of client function and skills. Access to information on test instruments is often poor in medical libraries, especially for test instruments that are not commercially published. Also of note is the percentage of cited references to newsletters and newspapers (2.7%). Many of these items are not routinely available in the small or medium-sized medical library. Most of the newsletters are published for the eleven special interest sections with AOTA. The most widely cited newspaper, *OT Week*, is published weekly and sent to members of AOTA.

Age of cited references, according to year of publication, is shown for books, journals, and miscellaneous categories in Table 2. Materials not categorized as books or journals had a higher percentage of citation to recently published references than for either books or journals. This category included "newsletters" and "newspapers," which might account for the trend of citing more recently dated publications. Journal cited

Table 2
Cited format types by publication year periods

Publication year	Books	Journals	Miscellaneous	Percent
1990-96	07.3	22.4	05.3	35.0
1980-89	14.3	27.8	04.9	47.0
1970-79	02.4	07.4	01.6	11.4
1960-69	01.3	01.4	00.5	03.7
Pre-1960	0.9	2.2	0.0	02.9
Percent	26.1	61.2	12.7	100.0

Table 3
Distribution by zone of cited journals and references in occupational therapy

Zones	Cited journals		Cited references		Cumulative total
	No.	(%)	No.	(%)	
Zone 1	3	(0.4)	1,728	(35.0)	1,728
Zone 2	117	(15.1)	1,565	(31.7)	3,293
Zone 3	657	(84.5)	1,642	(33.3)	4,935
Total	777	(100.0)	4,935	(100.0)	

references were more current than books. Nearly 82% of the cited references to journals were published in 1980 or later. The same percent of items listed in the "Miscellaneous" category were published in 1980 or later. The percentage of cited references to books published in 1980 or later was slightly less at 79%. Overall 81% of cited references were published between 1980 and 1996.

Table 3 shows the dispersion of journal literature in occupational therapy according to Bradford's Law of Scattering. The profession, in the United States, is highly dependent on the *AJOT* for cited references. *AJOT* so dominates the cited references that only three titles are needed to attain one-third of the cited references for Zone 1 or 0.4% of the 777 titles. In comparison, 117 titles (15.1%) are needed to attain two-thirds of the cited references for Zone 2. The remaining 657 titles (84.5%) are grouped in Zone 3. Therefore, approximately 16% of the journal titles produce two-thirds of the cited references. Of the 120 titles, 11 are associated with occupational therapy, 3 with physical therapy, 9 with nursing, 8 with rehabilitation, 47 with medicine, 23 with psychology, 13 with education, and 6 with other fields including occupational health, public health, allied health, leisure, and physical activity.

All journal titles in Zones 1 and 2 were searched in the lists of journals indexed for three databases: MEDLINE, CINAHL, and PsycINFO. Table 4 reports the ranked listing of titles in Zones 1 and 2, number of cited references, journal title indexing, and percentage of items indexed in the database. Of the three journals comprising Zone 1, only CINAHL indexed all three. Of the 117 journals comprising Zone 2, MEDLINE indexed the largest percentage at 71% although some journals were indexed selectively according to criteria set by the MEDLINE database. PsycINFO indexed the fewest journals at 46%, while CINAHL was in between at 52%. However, of the nine titles specific to occupational therapy that were active, only CINAHL provided indexing to all nine. MEDLINE indexed two and PsycINFO indexed three. The *American Journal of Occupational Therapy* was the only occupational therapy journal indexed in all three databases.

DISCUSSION

As expected of a field related to health and medicine, journals were the dominant source of information comprising 61% of all cited references. Over 80% were published in 1980 or later. The percentage of cited references to books was 26%. However, the number of books cited as published in the 1980s was twice (16%) the number published in the 1990s (8%). Considering that more books have been published in the 1990s than in the 1980s, why older books were being cited more frequently than the newer publications was unclear. Furthermore, in several instances, a more current edi-

tion had been published than the one cited in the reference. The tendency of occupational therapy authors to cite older literature has been previously documented in a study by Johnson and Leising [20].

One focus of the mapping project is to identify core journal literature and to assess the degree to which bibliographic control is available. Using all three databases, the indexing coverage for the journals in Zones 1 and 2 is 93%. For librarians, the message is to teach occupational therapy students to search all three databases for more complete coverage of occupational therapy topics and to recommend to clients that a search on an occupational therapy topic be done in more than one online service. For topics on occupational therapy practice, however, the best single database is CINAHL, because it indexes the most journals concerned primarily with occupational therapy. For an international perspective, the best choice is also CINAHL because the Canadian, British, and Australian journals are indexed. MEDLINE does not index any journal, concerned primarily with the field of occupational therapy, published outside the United States. The *Canadian Journal of Occupational Therapy* is selectively indexed on HealthStar, but the coverage is limited to articles dealing with administration and management. MEDLINE is the best source for information on medical management issues, as would be expected, and PsycINFO is the best source for information on psychological topics.

CONCLUSION

Occupational therapy draws upon a large field of information and borrows from several other subject areas. In addition to the medical journals, physical therapy, nursing, psychology, rehabilitation, and education journals appear in the Zone 1 and 2 journal list. Using any single database means potentially useful information is likely to be overlooked.

The study shows clearly that the profession of occupational therapy, in the United States, relies primarily on the *AJOT* as a source of information and cited references. Whether such reliance is justified because the journal represents the best the profession has to offer, or whether the reliance is due to the availability of bibliographic control cannot be determined by this study. Another contributing factor may be the relative ease of access by many practitioners and researchers since the *AJOT* is a benefit of membership to the American Occupational Therapy Association. All other journals require a separate subscription.

Because of the dominance of the *AJOT*, both in indexing and in cited references, the potential role of other nationwide journals of occupational therapy such as the Canadian, British, and Australian ones, is unclear. Those three nationwide journals may be cited more frequently if they appear in search results other

Table 4
Titles in Zones 1 and 2, numbers of cited references, percent of indexing

Zones	Cited references	Indexing		
		MEDLINE	CINAHL	PsycINF
Zone 1 (3 titles, 0.4%)				
1. Am J Occup Ther	1,425	Y	Y	Y
2. Arch Phys Med Rehabil	175	Y	Y	N
3. Occup Ther J Res	128	N	Y	Y
		67%	100%	67%
Zone 2 (117 titles, 15.1%)				
4. Phys Ther	75	Y	Y	N
5. Can J Occup Ther	68	HS	Y	N
6. Occup Ther Rehabil (Continued by Am J Phys Med, which changed the focus from occupational therapy to physical medicine)	56	N	N	N
7. Br J Occup Ther	49	N	Y	N
8. Occup Ther Health Care	38	N	Y	N
9. Dev Med Child Neurol	36	Y	Y	Y
10. Mod Hosp (ceased publication in 1974)	33	Y	N	N
11. Phys Occup Ther Geriatr	31	N	Y	Y
12. J Gerontol	28	Y	N	N
13. Hosp Community Psychiatry (Continued by Psychiatr Serv)	27	Y	Y	Y
14. Sex Disabil	26	N	Y	Y
15. Schizophr Bull	25	Y	N	Y
16. Infants Young Child	24	N	Y	N
17. Neuropsychologia	24	Y	N	Y
18. Scand J Rehabil Med	24	Y	Y	N
19. Child Dev	22	Y	N	Y
20. Soc Sci Med	22	Y	Y	Y
21. Except Child	21	YS	N	Y
22. Aust Occup Ther J	20	N	Y	Y
23. Cortex	20	Y	Y	Y
24. Gerontologist	20	Y	Y	Y
25. J Neurol Neurosurg Psychiatr	20	N	Y	Y
26. J Head Trauma Rehabil	19	N	Y	Y
27. Pediatrics	19	Y	Y	N
28. Am J Phys Med Rehabil	18	Y	N	N
29. J Adv Nurs	18	Y	Y	N
30. Neurology	18	Y	Y	Y
31. Arch Gen Psychol	17	Y	N	Y
32. Psychosom Med	17	Y	N	N
33. Brain	16	Y	Y	Y
34. Phys Occup Ther Ped	16	N	Y	N
35. Psychol Aging	16	Y	N	Y
36. J Res Dev Educ	15	N	N	N
37. Psychol Bull	15	Y	N	Y
38. J Allied Health	14	Y	Y	N
39. Am Psychol	13	Y	Y	Y
40. Arch Neurol	13	N	Y	Y
41. Int Disabil Stud	13	Y	N	N
42. JAMA	13	Y	Y	Y
43. Occup Ther Pract (Ceased publication in 1993)	13	N	Y	N
44. Age Aging	12	Y	Y	N
45. Am J Ment Retard	12	Y	N	N
46. Ergonomics	12	Y	Y	N
47. J Clin Exp Neuropsychogy	12	Y	N	N
48. J Hand Ther	12	Y	Y	N
49. J Pers Soc Psychol	12	Y	N	Y
50. Ped Phys Ther	12	N	Y	N
51. J Child Psychol Psychiatr	11	Y	N	Y
52. J Child Exp Neuropathol	11	N	N	N
53. J Am Geriatr Soc	11	Y	Y	Y
54. Am J Psychiatr	10	Y	Y	Y
55. Arthritis Rheum	10	Y	Y	N
56. Cogn Rehabil (Continued by J Cogn Rehabil)	10	N	Y	Y
57. J Nurs Adm	10	Y	Y	N
58. J Visual Impair Blind	10	N	N	Y
59. Percept Motor Skills	10	Y	N	Y
60. Am J Nurs	9	Y	Y	N
61. Arthritis Care Res	9	Y	Y	Y
62. J Abn Psychol	9	N	Y	Y
63. Med Educ	9	Y	Y	N
64. New Engl J Med	9	Y	Y	Y

Table 4
Continued

Zones	Cited references	Indexing		
		MEDLINE	CINAHL	PsycINF
65. Brain Cogn	8	Y	Y	Y
66. Infant Beh Dev	8	N	N	Y
67. J Exp Psychol	8	Y	N	Y
68. J Clin Psychol	8	Y	N	Y
69. J Hand Surg	8	Y	N	N
70. J Learn Disabil	8	Y	Y	Y
71. J Leisure	8	N	N	N
72. J Motor Behav	8	N	N	Y
73. J Nerv Ment Dis	8	Y	N	Y
74. J Am Acad Child Dev	8	Y	N	N
75. J Assoc Severe Handicap	8	N	N	Y
76. Med Care	8	Y	N	N
77. Nurs Clin North Am	8	Y	Y	N
78. Psychol Rev	8	YS	N	Y
79. Rural Spec Educ Q	8	N	N	N
80. Stroke	8	Y	Y	N
81. Adapt Phys Activity Q	7	N	Y	N
82. Child: Care Health Dev	7	Y	N	Y
83. Community Ment Health J	7	Y	Y	Y
84. Comput Nurs	7	Y	Y	N
85. J Appl Psychol	7	Y	N	Y
86. J Health Polit Policy Law	7	Y	Y	N
87. J Nurs Educ	7	Y	Y	N
88. J Am Paraplegia Soc	7	Y	N	N
89. Maryland Psychiatr Q (Ceased publication in 1923)	7	N	N	N
90. Rehabil Nurs	7	Y	Y	N
91. Rehabil Psychol	7	N	Y	Y
92. Acad Med	6	Y	N	Y
93. Clin Rehabil	6	N	Y	Y
94. Invest Ophthalmol Vis Sci	6	Y	N	N
95. J Appl Behav Anal	6	YS	N	Y
96. J Chron Dis	6	Y	N	N
97. J Dev Behav Pediatr	6	Y	N	Y
98. J Psychiatr Res	6	Y	N	Y
99. Neuropsychol Rehabil	6	N	Y	Y
100. Nurs Outlook	6	Y	Y	N
101. Physiotherapy	6	N	Y	N
102. West J Med	6	Y	Y	N
103. Adv Nurs Sci	5	Y	Y	N
104. Am Assoc Occup Health Nurs J	5	N	N	N
105. Am J Pediatr Hematol Oncol	5	Y	N	N
106. Am J Public Health	5	Y	Y	Y
107. Ann Intern Med	5	Y	Y	N
108. Aust Occup Health J	5	N	N	N
109. BMJ	5	Y	Y	N
110. Child Abuse Negl	5	Y	N	Y
111. Clin Infect Dis	5	Y	N	N
112. Educ Psychol Meas	5	N	N	Y
113. EducTrain Ment Retard	5	N	N	Y
114. Exp Brain Res	5	Y	N	N
115. Health	5	Y	Y	N
116. Health Aff	5	Y	N	N
117. Int J Qual Stud	5	N	N	N
118. J Am Health Policy	5	Y	N	N
119. J Clin Neuropsychol	5	Y	N	N
120. J Cooperative Educ	5	N	N	N
		71%	52%	46%

Y = Yes, journal is indexed; N = No, journal is not indexed; HS = HealthStar; YS = Yes, selectively.

than from CINAHL. The indexing of the *Canadian Journal of Occupational Therapy* in HealthStar is of little assistance to most practicing occupational therapy personnel because of the selective subject coverage. The

indexing should be changed to MEDLINE, full indexing should be incorporated, and the British and Australian occupational therapy journals should be added. These additions would be a positive step toward in-

creasing the availability of a more comprehensive scope of occupational therapy journal literature in MEDLINE.

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