
Mapping the literature of health education

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Health education is a relatively new multidisciplinary field concerned with educational programs that empower individuals and communities to play active roles in achieving, protecting, and sustaining their health. Its practitioners have bachelor's, master's, or doctoral degrees and work in educational, worksite, health facility, or agency settings. This bibliometric study was part of the Medical Library Association (MLA) Nursing and Allied Health Resources Section's Project for Mapping the Literature of Allied Health. It sought to identify the core journals in health education and to determine the extent to which these titles are covered by the standard indexing sources. Cited references appearing from 1991 through 1993 in articles of four journals published by the major professional associations in the field were analyzed. It was found that only thirteen journals supply one-third of all references in the study. Another eighty journals provide the second third. MEDLINE gives the best indexing coverage with nearly 69% of the journals receiving indexing for at least half of their articles, followed by EMBASE (52%) and PsycINFO (43%). Limited coverage is given by the Cumulative Index to Nursing and Allied Health Literature (16%) and ERIC (14%). The findings name titles that should be added by indexing services and those that should have more complete coverage.

INTRODUCTION

Health education is a relatively new field of study, although a partnership between health and education dates back more than a century. Lemuel Shattuck, the public health pioneer and author of the classic *Report of the Sanitary Commission of Massachusetts*, advised in 1850 that every child be taught health principles in school by a qualified educator. By 1890, a majority of states had passed legislation requiring the teaching of physiology and hygiene [1]. Physicians did much of the early teaching. Undergraduate and graduate programs in health education and physical education began in the early 1900s, and emphasis shifted from factual knowledge about the human body to a focus on health habits. Educators believed that informing people was sufficient to influence them to modify their behavior. Providing information was subsequently found to have limited effectiveness, and by the 1950s researchers began using theory and measurement methods from social psychology to explore the relationship between knowledge, attitude, and behavior.

As a more holistic understanding of health developed, researchers investigated more complex models that might predict health-related behavior and suggest effective interventions to promote health, protect the citizenry, and prevent disease [2]. With the publication of *Healthy People* and the follow-up report, *Promoting Health/Preventing Disease: Objectives for the Nation* in 1980, health education was identified as a federal priority [3, 4].

Health education is defined as "that multidisciplinary practice, which is concerned with designing, implementing, and evaluating educational programs that enable individuals, families, groups, organizations, and communities to play active roles in achieving, protecting, and sustaining health" [5]. Practitioners have bachelor's, master's, or doctoral degrees and work in educational, work-site, health facility, or agency settings. Steps were taken to standardize the health education curriculum and ensure professionalization of the field, beginning in 1978 with the Role Delineation Project. This project led to the identification of basic competencies for entry-level health educators and the

creation in 1988 of the National Commission for Health Education Credentialing. The first examination for Certified Health Educator Specialist (CHES) was administered in 1990.

Means maintained that health education established itself as a unique field by the 1950s [6]. Others consider it to be in an "early stage of development" [7]. Campbell states that it is "experiencing the normal teething troubles of definition, main focus, contributory disciplines and their purpose and function" [8]. This was underscored in a bibliometric study by Schloman and Byrne, which found that nearly half of the health education research journal articles in the study were published in journals of other fields—namely medicine, nursing, public health, and the social sciences [9]. Education journals were found to make only a small contribution.

The present 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 (MLA), which is described in the project overview. The inclusion of health education in the project was based upon a broad definition of allied health as encompassing "all health personnel working toward the common goal of providing the best possible services in patient care and health promotion" [10]. This working definition of the National Commission on Allied Health Education in its 1980 report classified allied health occupations into two major categories: institutional direct patient care services and community health promotion and protection services. Health education in this schema was a multidisciplinary allied health field of the latter type. However, another federal report also issued in 1980 classified health education as falling under the broad rubric of public health [11], which more closely corresponds to how it is looked upon today. Regardless of how health education is classified, it permeates the work of many allied health professionals. Its inclusion here is intended to broaden the understanding of health educators and the other health professionals using this literature, as well as the librarians who serve them.

The purpose of this study is to identify the titles that constitute the core journal literature of health education at this time and to determine the extent to which this material is indexed by standard bibliographic tools. Mapping the journal literature of health education will enable librarians to work more effectively with those who use it, and may enlighten health educators as to where their most productive literature is appearing and how it can best be accessed. This study also has implications for collection development and for the journal coverage given to health education by indexing vendors.

METHODOLOGY

The common methodology of the Project for Mapping the Literature of Allied Health, which is described in the project overview, was followed. Health education is not one of the fields covered in the Brandon/Hill "Selected List of Books and Journals in Allied Health" [12]. Therefore, the source journal selection needed to be made on another basis, and four official professional society publications were chosen. These associations represent the major spheres of health education in the United States. Their journals record the current practice and research findings within the field and reach a large part of the health education community by virtue of association membership.

The Association for the Advancement of Health Education has a historical connection to the health and physical education teacher who plays the role of health educator, but today's membership includes all types of health educators. The American School Health Association and the American College Health Association both focus on health services, including health education, within specific school-related settings. The Society for Public Health Education traditionally represents health educators with a public health background. The journals of these organizations are *Health Education Quarterly (HEQ)*, published by the Society for Public Health Education; *Journal of American College Health (JACH)*, from the American College Health Association; *Journal of Health Education (JHE)*, from the Association for the Advancement of Health Education; and *Journal of School Health (JSH)*, from the American School Health Association.

All references appearing in articles in the four source journals for the years 1991 through 1993 were reviewed. Only full articles in the source journals were used; editorials, letters to the editor, practice briefs, teaching ideas, and news items were eliminated. For each cited item in the reference lists, a note was made of the type of format and publication year. For journal citations, the specific journal title cited was also recorded.

Four categories were used to identify common formats cited in health education articles: books, government documents, journal articles, and miscellaneous. The "books" classification was used for all monographs that were not cited as numbered series. "Government documents" was made a separate category because of the belief that information from the federal government in particular is heavily used by health educators. It included non-serial documents and was also used to classify items published by a government entity at a local, state, or international (e.g., United Nations) level. The "journal articles" category was used for periodicals, journals, and serials. "Miscellaneous" included informal publications, such as pamphlets, informal communications, and dissertations.

Table 1
Cited format types by source journal and frequency of citations

Cited format type	No. citations in source journals				Citations	
	HEQ	JACH	JHE	JSH	No.	Fre- quency (%)
Journal articles	1,781	1,212	1,960	2,208	7,161	64.8
Books	666	356	669	394	2,085	18.9
Miscellaneous	230	150	338	423	1,141	10.3
Government documents	127	83	186	271	667	6.0
Total	2,804	1,801	3,153	3,296	11,054	100.0

HEQ = Health Education Quarterly, JACH = Journal of American College Health, JHE = Journal of Health Education, JSH = Journal of School Health.

Cited journal titles were arranged in rank order according to frequency of citation. Bradford's Law of Scattering was used to divide the ranked list into three equal zones according to number of citations. Zone 1 journals represent the core literature of the field. Zone 2 journals are the next most productive sources of information, and Zone 3 represents the grouping of greatest dispersion and least productivity. In order to determine the relative importance of each title to health education, journals that had undergone a title change and appeared on the rank list under more than one title were combined under the current title.

Indexing coverage for Zones 1 and 2 was then checked; again, the established methodology was used. Five major indexing tools were consulted because they are the ones most likely to be referred to by health educators. They were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), EMBASE, ERIC, MEDLINE, and PsycINFO. The journal titles from Zones 1 and 2 were searched in each of these online databases for publication year 1994 to determine whether the titles were currently indexed and the indexing was relatively complete. The extent of indexing coverage given by each indexing tool was rated for each journal title on a scale of 5 to 0 (high to low): 5 (95%–100%); 4 (75%–94%); 3 (50%–74%); 2 (25%–49%); 1 (1%–24%); 0 (<1%).

RESULTS

The number of articles that met the criteria for this study and the average number of references cited per article differed by source journal: HEQ (91 source articles, average 30.8 references per article), JACH (86 source articles, average 20.9 references per article), JHE (153 source articles, average 20.6 references per article), and JSH (142 source articles, average 23.2 references per article). In total, the reference lists appearing in 472 source articles were checked, yielding 11,054 citations. Classification by format type showed that

Table 2
Cited format types by publication year periods

Publication year	Journal articles (%)	Books (%)	Miscellaneous (%)	Government documents (%)	Total citations (%)
1990–1993*	20.1	16.4	28.8	31.3	21.1
1985–89	47.9	34.6	47.7	43.6	45.1
1980–84	18.7	24.9	10.3	10.8	18.6
1970–79	10.3	17.4	6.5	10.2	11.3
1960–69	1.7	4.2	1.5	0.6	2.1
Pre-1960	1.1	2.2	2.3	1.5	1.4
Not available	0.2	0.3	3.0	1.9	0.5

* Includes materials in press.

nearly two-thirds of the citations were to journal articles (64.8%). Next in importance were books (18.9%), followed by miscellaneous material (10.3%) and government documents (6.0%). Table 1 shows this distribution.

Age of citations, as represented by publication year, is shown for each format type in Table 2. Government documents cited are typically more current than the other material types with 74.9% having publication dates of 1985 to 1993. Books represent the oldest material used, with only 51.0% having publication dates within that time period. The focus of this study is on the journal literature, and the results show that approximately two-thirds (68.0%) of the citations to journal articles were published from 1985 through 1993. The currency of the miscellaneous material is approximately the same at 76.5%. Overall, two-thirds of the literature (66.2%) were published from 1985 through 1993.

The application of Bradford's Law of Scattering reveals the dispersion of the health education journal literature (Table 3). Only thirteen journals are needed to supply one-third of the cited references for Zone 1. However, eighty journals are required to produce the second grouping of citations in Zone 2, and 1,041 journals to yield the references that constitute Zone 3. Therefore, slightly more than 8% of the cited journals produce two-thirds of the cited references.

All cited journal titles in Zones 1 and 2 were searched online in each of the five indexing services

Table 3
Distribution by zone of cited journals and references

Zone	Cited journals		Cited journal references		
	No.	%	No.	%	Cum. total
Zone 1	13	1.1	2,400	33.5	2,400
Zone 2	80	7.1	2,350	32.8	4,750
Zone 3	1,041	91.8	2,411	33.7	7,161
Total	1,134	100.0	7,161	100.0	

Table 4
Distribution and indexing coverage of cited journals in Zones 1 and 2

Cited journal	No. of citations	CIN-AHL	EM-BASE	ERIC	MED-LINE	Psyc-INFO
Zone 1						
1. J Sch Health	436	5	0	3	5	0
2. Am J Public Health	312	1	3	0	5	2
3. Health Educ Q (formerly Health Educ Mono)	304	2	0	3	5	4
4. J Health Educ (formerly Health Educ)	230	4	0	2	0	0
5. J Am Coll Health	195	0	4	2	5	3
6. JAMA	184	1	4	0	5	0
7. Fam Plann Perspect	152	2	5	0	3	0
8. Prev Med	117	2	4	0	5	0
9. Pediatrics	108	2	4	1	5	0
10. J Am Diet Assoc	104	3	3	0	5	0
11. J Consult Clin Psychol (formerly J Consult Psychol)	89	0	4	4	5	5
12. N Engl J Med	88	1	3	0	5	1
13. Public Health Rep	81	2	5	0	5	0
Zone 2						
14. J Pers Soc Psychol	79	0	0	0	3	4
15. MMWR Morb Mortal Wkly Rep	73	0	0	0	5	0
16. J Adolesc Health (formerly J Adolesc Health Care)	70	4	3	0	5	3
17. Am Psychol	64	0	0	1	2	5
18. Health Psychol	58	4	0	0	5	5
19. Soc Sci Med	56	2	4	0	5	3
20. Health Educ Res	55	4	4	0	0	3
21. J Nutr Educ	50	5	0	0	0	0
22. J Appl Soc Psychol	49	0	0	0	0	5
23. Am J Health Promot	48	3	5	0	0	3
24. J Occup Med	47	0	4	0	5	0
25. J Behav Med	46	0	5	0	5	5
26. Res Q Exerc Sport (formerly Res Q)	46	0	0	1	5	0
27. Am J Clin Nutr	45	3	5	0	5	0
28. Adolescence	44	0	0	5	5	5
29. Am J Epidemiol	44	0	4	0	5	0
30. Arthritis Rheum	43	0	4	0	5	0
31. J Stud Alcohol	42	0	5	0	4	0
32. Am J Dis Child	41	0	4	0	5	0
33. J Coll Student Dev (formerly J Coll Student Personnel)	41	0	3	0	0	3
34. Health Values	39	0	0	2	0	4
35. J Health Soc Behav	36	0	0	0	5	5
36. Science	36	0	5	1	4	1
37. Psychol Rep	35	0	0	0	3	5
38. J Drug Educ	34	0	0	4	5	5
39. Psychol Bull	34	0	0	0	3	5
40. Am J Psychiatry	33	0	4	0	5	5
41. J Marr Fam	33	0	0	3	0	0
42. J Sex Res	33	0	5	0	0	4
43. Med Care	33	0	0	0	5	2
44. Am J Prev Med	32	0	4	0	5	2
45. Educ Leadership	31	0	0	3	0	0
46. SIECUS Rep	29	0	0	0	0	0
47. Lancet	28	1	4	0	5	0
48. Addict Behav	27	0	4	0	5	5
49. Ann Rev Public Health	27	0	0	0	5	0
50. Int J Addict	26	0	4	0	5	5
51. J Pediatr	26	0	5	0	5	0
52. Am J Community Psychol	23	0	0	0	3	4
53. BMJ (formerly Brit Med J)	23	1	5	0	4	0
54. Patient Educ Counsel (formerly Patient Counsel Health Educ)	23	4	4	0	4	5
55. Am Sociol Rev	22	0	0	1	0	2
56. J Counsel Dev (formerly Personnel Guid J)	22	0	0	3	0	4
57. AIDS Educ Prev	21	4	4	0	5	4

Table 4
Continued

Cited journal	No. of citations	CIN-AHL	EM-BASE	ERIC	MED-LINE	Psyc-INFO
58. Annals Intern Med	21	1	5	0	5	0
59. HIV/AIDS Surveill Rep (formerly HIV/AIDS Surveill)	21	0	0	0	0	0
60. J Rheumatol	21	0	5	0	5	0
61. J Phys Educ Recreat Dance (formerly J Phys Educ Recreat)	20	0	0	2	0	0
62. Nurs Res	20	5	0	0	5	3
63. Chron High Educ	19	0	0	1	0	0
64. Int Q Community Health Educ	19	0	0	0	0	3
65. J Counsel Psychol	19	0	0	5	0	0
66. Sci Technol Hum Values	19	0	0	0	0	0
67. Behav Ther	18	0	2	0	0	4
68. Cancer	18	0	5	0	5	0
69. Fam Community Health	18	0	0	0	0	2
70. J Fam Pract	18	0	3	0	5	1
71. Child Dev	17	0	0	3	4	4
72. Pediatr Clin North Am	17	5	1	0	5	0
73. Wellness Perspect	17	0	0	0	0	0
74. Arch Intern Med	16	0	5	0	5	0
75. Clin Chem	16	0	5	0	5	0
76. J Homosex	16	0	5	0	5	2
77. J Soc Issues	16	0	0	1	0	4
78. J Natl Cancer Inst	16	0	3	0	5	0
79. Med Sci Sports Exerc (formerly Med Sci Sports)	16	0	4	0	5	1
80. Milbank Q (formerly Milbank Mem Fund Q)	16	0	0	0	5	3
81. Obstet Gynecol	16	3	5	0	5	0
82. Psychol Rev	16	0	0	3	3	4
83. J Chron Dis (cont'd by J Clin Epidemiol)	15	0	5	0	5	0
84. J Commun	15	0	0	1	0	1
85. J Community Health	15	3	4	1	5	0
86. Am J Orthopsychiatry	14	0	5	0	5	5
87. Circulation	14	0	4	0	5	0
88. Educ Week	14	0	0	0	0	0
89. Hygie (formerly Int J Health Educ; cont'd by Promot Educ)	14	0	0	0	5	0
90. J Abnorm Psychol	14	0	5	0	5	5
91. J Alcohol Drug Educ	14	0	0	5	0	4
92. J Youth Adol	14	0	0	4	0	5
93. Psychol Women Q	14	0	0	1	0	3
Total indexing coverage score		77	236	66	305	185
Indexing coverage scale: 5 (95%–100%); 4 (75%–94%); 3 (50%–74%); 2 (25%–49%); 1 (1%–24%); 0 (<1%).						

and limited to publication year 1994. Table 4 presents the ranked listing of titles in Zones 1 and 2 and the bibliographic coverage given by each of the indexing tools on the scale described above. In addition, a total score for indexing coverage is presented. MEDLINE clearly provides the greatest coverage for journals in both Zone 1 and Zone 2, with nearly 69% of the titles receiving indexing for at least half of their articles. EMBASE is next with 52%, followed by PsycINFO with 43%. Limited coverage at this level is given by CINAH (16%) and ERIC (14%). The total score for each indexing service reflects these same relative differences in indexing coverage in general.

DISCUSSION

As expected, journal articles were found to serve as the primary medium for referencing and building upon prior work, accounting for nearly two-thirds of all cited references. Of these, 68.0% were published in the nine-year period between 1985 and 1993, and nearly 90% from 1980 through 1993. The perceived importance of government documents to the field seems to be borne out by the 6.0% representation of this rather minor format type in this sample. This material also had the best overall currency of any format. Librarians working with a health education clientele should be sensitive to the potential importance of the category and be prepared to direct users to the growing array of federal information resources that are becoming more widely available (e.g., *MMWR* via the Internet).

Books accounted for 18.9% of the total of cited items and were the oldest material represented. Some of these works may represent classics within the field. Nonetheless, concern about age of the material seems justified given that nearly half of the books were published in or before 1984. Again, librarians may consider highlighting for health education users improved means identifying more current and potentially useful books and learning how they might be acquired if not held locally.

The focus of this study was to identify the core journal literature of health education and assess the degree to which it is under adequate bibliographic control. That control seems to be available only through the use of a patchwork approach. The core literature reveals a multidisciplinary focus, which is borne out by the various disciplinary indexes that would need to be used to obtain full coverage. Librarians could be assured from the findings in this study that MEDLINE is the appropriate index of first choice for access to the health education core literature. PsycINFO provides a strong complement and enhances the coverage of the social sciences. Both of these tools have as their objective, of course, to cover the world's literature within their defined domains.

EMBASE offers a strong second to MEDLINE, but is probably less available in many libraries used by health educators. In fact, title for title, EMBASE provides significant coverage (>75%) to only two titles important to the field that are not covered by MEDLINE: *Health Education Research* and *American Journal of Health Promotion*. CINAHL has the most restricted scope of any of the indexing tools tested. Still there would seem to be some basic titles that should be added and others for which the level of indexing should be increased. Studies such as this can suggest to database producers what those might be. For example, the omission of *JACH* from CINAHL and the low level of indexing given *HEQ* seem worthy of reconsidera-

tion. Similarly, *Health Education Research* would appear to be a useful addition to MEDLINE.

CONCLUSION

In general, the results of the study seem to confirm earlier discussions in the literature about the state of health education. It is a developing field of study, and there is evidence that the literature borrows a great deal from other disciplines—particularly relying on the medical and social sciences literature. It is surprising that Zone 1 includes a number of titles from other disciplines and that some of the more "pure" health education journals are further down the list in Zone 2. This seems to confirm the findings of Schloman and Byrne that the reliance on fields other than health education is very strong [13].

The medical and social science influences within health education are also made evident by the sources that provide the strongest combination of indexing. MEDLINE and PsycINFO taken in combination provide indexing at greater than the 74% level for 77% of the titles in Zones 1 and 2, far surpassing any other index combination. The field clearly draws upon the health and the behavior-related literature more than upon education titles. The relatively weak coverage given to health education by both CINAHL and ERIC is important information for both practitioners and librarians so that they may be guided to use more profitable avenues to primary sources.

It would be interesting to see whether a repeat of this study several years hence would show any change in the reliance placed on different format types, the age of citations, or the dispersion of the journal literature. One would hope, in future studies, to see increased attention given to the journal literature by the various indexing services.

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Received September 1996; accepted February 1997