Factors influencing research productivity among health sciences librarians*

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Secondary analysis was performed of data collected in 1989 from a
random sample of members of the Medical Library Association.
Results show that about half the sample had at least one publication;
academic health sciences librarians were much more likely than
hospital librarians to have published. Almost half the sample had
taken formal courses in research, but only a small percentage had
taken continuing education (CE) courses in research. Institutional
support services for research were most available in academic
settings. The combination of institutional support, CE training, and
research courses explained 31.1% of the variation in research
productivity among academic librarians; these factors were less
important in hospitals and other institutional settings. The authors
suggest that health sciences librarians working outside academia
should seek support for research from sources outside the employing
institution.

INTRODUCTION

Over time, leaders of all library fields, including the
health sciences, have come to recognize the value of
research. Erika Love emphasized the importance of
research to the future of medical librarians in her
1987 Janet Doe Lecture: "Today, research is a critical
survival factor. Library research assures that we, as
members of a profession, control and develop our
own body of knowledge" [1].

Love originated the efforts of the Medical Library
Association (MLA) to promote research. In 1978, as
president of the MLA, she appointed an Ad Hoc Com-
mittee to Study MLA's Role in Library-Related Re-
search [2]. At its postconference meeting in 1981, the

MLA Board of Directors passed a resolution acknowl-
edging the importance of research [3]. The Library
Research Section was established in 1982

to foster research-related skills of individual health sciences
librarians; to promote interest in research among members
of the association to further the knowledge base of the
discipline . . .; and further, to serve as an action group for
the advancement of library research [4].

In 1983, the Editorial Committee for the *Bulletin of the
Medical Library Association*, the Editorial Committee
for the *MLA News*, and the Publication Panel cospon-
sored a session at the MLA annual meeting in which
editors and authors talked about the process of writ-
ing and publishing. In 1984, MLA sponsored a New
Writers' Forum, designed to encourage presentations
by novice authors. The forum was repeated success-
fully in 1985.

The MLA mission statement, developed in the mid-1980s, calls for "professional excellence and leadership in . . . research in health information science," among other goals [5]. This aspect of the stated mission is carried out in a number of ways. For example, MLA has been a leader in continuing education (CE). Except for a few years in the early 1970s and the early 1980s, MLA has offered at least one CE course related to research every year since 1968 [6]. In recent years, there has been a resurgence of interest in research-related courses, and two postconference MLA annual meeting symposia have dealt with research-related matters.

Research methods has been defined as one of ten core areas of knowledge by the MLA's credentialing program, the Academy of Health Information Professionals. Beginning librarians seeking academy membership are expected to have taken a course that provides "at least a basic approach to understanding the research process, the nature of scientific inquiry, and the role of research in the library and information profession" [7].

In recent years a number of library associations have formulated research agendas [8–11]. An MLA research agenda is under development.

RESEARCH IN THE LITERATURE

Until recently, discussions of the research process have been conspicuously absent from the literature of health sciences librarianship. The first mention is Carolyn Weaver's guest editorial in the April 1985 *Bulletin of the Medical Library Association* [12]. She discussed barriers to research and classified them into four general categories: false perceptions about the publication process, inexperience, logistics†, and lack of support by organization or peers. Overcoming these barriers, Weaver noted, may involve use of personal time, as it is "unrealistic to expect that professional writing can be confined to working hours." She suggested that institutions could demonstrate commitment by providing release time, by providing secretarial support, and by supporting library staff use of interlibrary loan (ILL) and online computer searches.

In 1990, Trudy Landwirth, associate editor of the *Bulletin*, analyzed submissions to the journal and found that hospital librarians were not contributing what she termed their "fair share." Hospital librarians constitute the largest segment of the MLA membership but contribute only 20% of submissions to the *Bulletin* [13]. Responding to the editorial, hospital librarian Nina Hull suggested that hospital librarians feel

"MLA won't publish their material; perhaps their writing needs improvement; and perhaps their research is not up to quality standards." Nevertheless, Hull suggests that hospital librarians' "experience, knowledge, and assertiveness should be channeled into professional output" [14].

Also in 1990, Ada Seltzer reported on a study of release time in academic health sciences libraries, which received a 95% response. Eighty-six (54%) of the 159 respondents allowed staff release time for research projects; 67 institutions indicated that on-the-job time was granted; and 63 gave sabbaticals. In the previous five years, 156 individuals in academic medical libraries had taken on-the-job release time and 57 had taken sabbaticals [15].

Amrita Burdick and others reported on a 1988 survey of the Midcontinental Chapter of MLA, which had a 75% response. They found that 42% of 170 respondents had given a presentation, 30% had written a grant proposal, and 21% had published. Time (77.6%), money (37.1%), and insecurity about research skills (36.5%) were the constraints mentioned most frequently. Also cited were shortages of ideas, management support for research, interest in research, and access to research literature and tools [16].

Mularski and Bradigan studied the publication patterns of a random sample of 254 academic health sciences librarians [17]. Data were gathered on gender, position, professional maturity, educational background, geographic region, and presence or absence of faculty status. Publication productivity was determined by examining publications listed on resumes; only items published or accepted in 1979 or later in a nonlocal publication were counted. (Book reviews and regular columns were not counted.) Just over 50% of the 182 respondents had published. Of those who had authored at least one item, the average number of publications was 5.4; the average number for all respondents was 2.7.

Most authors held administrative or supervisory positions, and publication rate increased in relation to years in the profession. Although men had published more than women, the differences were not statistically significant when professional maturity and position were considered. Respondents with a subject master's or doctoral degree (16.6%) averaged 4.4 publications each; those without additional advanced degrees averaged 2.4 publications each. About three quarters of all respondent publications were by librarians in the latter group. Eighty-seven of the 169 respondents held positions with faculty status; thirty-five of these were required to publish. Faculty members without a publication requirement had an average of 3.7 publications; those with a publication requirement averaged 2.5 publications. By comparison, respondents without faculty status had an average of 2.2. Hence, it appears faculty status in and

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† Logistics includes lack of time, lack of secretarial support, and lack of resources for research.

of itself has a greater influence on publication rate than does the requirement to publish.

Dalrymple and others reported the results of a 1989 survey of MLA members' educational preparation for research and their interest in acquiring research skills through CE. Twenty-one percent of the respondents had received formal training in research methods and statistics in the previous five years. Twenty percent indicated they planned to take a research-related course in 1989, and 47% indicated an interest in taking research-related courses at some time [18]. Data on research support services available in members' institutions also were collected.

THE STUDY

To determine which factors affect research and publication productivity among health sciences librarians, the authors performed additional analysis of the MLA data. The purposes of the secondary analysis were to determine the level of research productivity, the level of institutional support for research, and the extent of educational preparation for research and to assess the influence of institutional support, educational preparation, and type of setting on research productivity.

Data used in the study were collected by the MLA Library Research Section liaison to the CE Committee [19]. For some variables, recoding was done to group the data in a manner more suitable for this study. Data were collected from a random sample of 300 regular and institutional members of MLA, drawn by the University of Illinois at Urbana–Champaign (UIUC) Library Research Center from the *1989/90 Directory of the Medical Library Association*. After one follow-up mailing, 207 usable responses were received, for a response rate of 69%. Usable questionnaires were returned by 89 hospital librarians (44.3%), 53 academic health sciences librarians (26.4%), and 59 other MLA members (29.3%). The data were coded and input by the Library Research Center [20].

VARIABLES

Six variables were selected for use in the secondary analysis, as follows:
■ Institutional setting. The three categories were hospital, academic health sciences, and other, including corporate, association, non-health sciences academic, and library school settings. Six respondents were retired or unemployed and were excluded from the analysis, except when indicated.
■ Research productivity. Those who had published a book or an article in a refereed or national journal were categorized as major publishers, those who had a work in progress or had published in a local or regional journal or newsletter were categorized as

minor publishers, and all others were considered nonpublishers. Research productivity was based on the highest level attained by each respondent, not on numbers of publications.
■ Grant activity. Respondents were divided into those who had applied successfully for a grant and all others.
■ CE training. This variable was measured in contact hours in statistical analysis, research methods, and critical reading of research literature. (Dalrymple and others did not include critical reading in calculating formal courses and CE training.)
■ Courses. This variable was measured by number of credits in the same three areas.
■ Institutional support. Respondents were asked to indicate on a grid if the following research support services were available free, for a fee, or with a subsidy in their institution: statistical consultation; data analysis; online or CD-ROM literature searching of nonmedical databases; release time for research; clerical support, such as typing, keyboarding, manuscript preparation, and photocopying; research assistance, such as data collection and input; and identification of funding sources. For each type of service, level of support was calculated by assigning two points for a free service, one point for subsidized or fee, and zero when the service was not available or the respondent didn't know about it. The average of these values constitutes the "average availability of support" referenced in the following discussion.

Descriptive data were compiled and analyses were performed by the UIUC Library Research Center, using SPSS-X.

RESULTS

Table 1 summarizes the descriptive data. Librarians working in the academic health sciences setting were much more likely than hospital librarians to have published at least once. On the other hand, hospital librarians were more likely to have written a successful grant application. Only a small percentage of librarians in any of the three settings had taken research CE. About half of the librarians working in academic health sciences and in other settings had taken formal research courses; only about 40% of the hospital librarians had. Less than 20% of academic health sciences librarians reported no research support services, compared to some 40% of hospital librarians and others.

Table 2 shows the number and percentage of librarians in each institutional setting reporting each of seven forms of research support. Over 60% of all respondents reported availability of online search services for nonmedical databases; about 50% have clerical support for research. For each category of support, librarians working in academic settings lead

Table 1
Summary of descriptive data

	Hospital (n = 89) Number (%)	Academic (n = 53) Number (%)	Other (n = 59) Number (%)	Total (n = 201) Number (%)
Some publications	32 (36.0%)	34 (64.2%)	32 (54.2%)	98 (48.8%)
No publications	57 (64.0%)	19 (35.8%)	27 (45.8%)	103 (51.2%)
Total	89 (100.0%)	53 (100.0%)	59 (100.0%)	201 (100.0%)
Grant	30 (33.7%)	14 (26.4%)	15 (25.4%)	59 (29.4%)
No grant	59 (66.3%)	39 (73.6%)	44 (74.6%)	142 (70.6%)
Total	89 (100.0%)	59 (100.0%)	59 (100.0%)	201 (100.0%)
Some CE	10 (11.2%)	7 (13.2%)	7 (11.9%)	24 (11.9%)
No CE	79 (88.8%)	46 (86.8%)	52 (88.1%)	177 (88.1%)
Total	89 (100.0%)	53 (100.0%)	59 (100.0%)	201 (100.0%)
Some courses	36 (40.4%)	26 (49.1%)	29 (49.2%)	91 (45.3%)
No courses	53 (59.6%)	27 (50.9%)	30 (50.8%)	110 (54.7%)
Total	89 (100.0%)	53 (100.0%)	59 (100.0%)	201 (100.0%)
Some support	51 (57.3%)	43 (81.1%)	36 (61.0%)	130 (64.7%)
No support reported	38 (42.7%)	10 (18.9%)	23 (39.0%)	71 (35.3%)
Total	89 (100.0%)	53 (100.0%)	59 (100.0%)	201 (100.0%)

in access, librarians in other settings come next, and hospital librarians trail behind. Release time is the least common form of support; assistance with data collection, coding, and input are not widely available. Data analysis and funding-identification are less available to hospital librarians and those in other settings than to academic health sciences librarians.

Regarding highest level of publication attained, 40 (19.3%) of the respondents had published in a refereed journal, 22 (10.6%) in a national nonrefereed journal, 34 (16.4%) in a local journal or newsletter, and 101 (48.8%) had not published. (This includes the six retired and unemployed respondents.) When classified into major, minor, and nonpublisher categories, 30.8% were major publishers; 17.9%, minor publishers; and 51.2%, nonpublishers, excluding the six retired and unemployed respondents. As a group, hospital librarians tended to be nonpublishers; 64% had not published at all. Nearly two thirds of academic

librarians had published; almost half had published a book or an article in a refereed or national journal. Over 50% of health sciences librarians working in other settings had published.

The average availability of support ranges from zero for not available to two for maximum availability (i.e., the service is free). Research support services were most available in the academic health sciences setting (0.6) and least available in the hospital setting (0.4). This holds true both overall and by category (with the exception of clerical support). Research support services are more available to the major publishers (0.6) than to minor and nonpublishers (both 0.4).

Table 3 shows the relationship between the highest level of publication and the other variables of the study. (The six retired and unemployed respondents are included.) Minor publishers and nonpublishers were distinctly less likely to have written a successful grant proposal or to have taken research-related CE

Table 2
Institutional support by work setting

Type of support	Hospital (n = 89) Number (%)	Academic (n = 53) Number (%)	Other (n = 59) Number (%)	Total (n = 201) Number (%)
Statistical consulting	17 (19.1%)	31 (58.5%)	21 (38.6%)	69 (34.3%)
Data analysis	19 (21.3%)	28 (52.8%)	18 (30.5%)	65 (32.3%)
Online search service (nonmedical)	43 (48.3%)	43 (81.1%)	38 (64.4%)	124 (61.7%)
Release time	10 (11.2%)	17 (32.1%)	12 (20.3%)	39 (19.4%)
Clerical support	36 (40.4%)	30 (56.6%)	33 (55.9%)	99 (49.3%)
Research support	11 (12.4%)	18 (34.0%)	20 (33.9%)	49 (24.4%)
Identification of funding	24 (27.0%)	28 (52.8%)	18 (30.5%)	70 (34.8%)
No support reported	38 (42.7%)	10 (18.9%)	23 (39.0%)	71 (35.3%)
Some support reported	51 (57.3%)	43 (81.1%)	36 (61.0%)	130 (64.7%)

Table 3
Descriptive relationships between publication and other variables

	Major (n = 62) Number (%)	Minor (n = 37) Number (%)	Nonpublisher (n = 108) Number (%)	Total (n = 207) Number
Grant	27 (43.5%)	10 (27.0%)	22 (20.4%)	59
No grant	35 (56.5%)	27 (73.0%)	86 (79.6%)	148
Total	62 (100.0%)	37 (100.0%)	108 (100.0%)	207
Some CE	13 (21.0%)	5 (13.5%)	6 (5.6%)	24
No CE	49 (79.0%)	32 (86.5%)	102 (94.4%)	183
Total	62 (100.0%)	37 (100.0%)	108 (100.0%)	207
Some courses	37 (59.7%)	16 (43.2%)	41 (38.0%)	94
No courses	25 (40.3%)	21 (56.8%)	67 (62.0%)	113
Total	62 (100.0%)	37 (100.0%)	108 (100.0%)	207
Average availability of research support services	0.6	0.4	0.4	0.5

courses. Interestingly, 75% (18 of 24) of respondents who had taken some research-related CE had published, but only 56% (53 of 94) who had taken formal courses had published.

Multiple regression, which allows assessment of the simultaneous effect of two or more variables on another variable, was used to examine the influence of educational preparation and institutional support on research productivity. Two separate analyses were performed—one for respondents working in academic health sciences libraries and the other for all other respondents. Institutional support for research, research CE, and research courses were entered simultaneously as independent variables; successful grant application was added as an independent variable in a separate step. Research productivity was the dependent variable. All variables were coded in a manner appropriate for interval-level variables. The results of these analyses are shown in Table 4.

For academic health sciences librarians, the combination of support, CE training, and courses explained 31.1% of the variation in research productivity. When successful grant application was added, 38.6% of the variation was explained. Institutional support for research was the best relative predictor of research productivity among librarians working in academic health sciences settings. Next was successful grant application, followed by research-related courses.

For those working in hospitals and other institutional settings, only 5.4% of the variation in research productivity was explained by the combination of institutional support for research, CE training, courses, and specific setting. When successful grant application was added as an independent variable, the percentage increased slightly, to 7.4%. Only the specific setting (hospital vs. other) was a significant predictor; in other words, for those outside academic health sciences settings, none of the other variables

used in this study significantly affected research productivity.

These results indicate that, for academic health sciences librarians, three variables (research support, successful grant application, and research courses) that explain over one-third of the differences in research productivity have been identified. For hospital librarians and those working in other settings, these variables explain only a small proportion of differences in research productivity. Other variables influencing research productivity, yet to be identified, must exist.

DISCUSSION

This analysis shows that librarians working in academic health sciences settings are more likely to have published than are those working in hospitals. Those

Table 4
Multivariate analysis of relationships between publication and other variables

	Academic health sciences		All other subjects	
	beta	sig t	beta	sig t
Without grant				
Support	0.54710	0.0001	0.04765	0.6385
CE training	0.03108	0.8108	0.15259	0.1066
Courses	0.30149	0.0253	0.02489	0.8023
Specific setting	NA		0.22344	0.0225
	Adjusted R² = 0.31110		Adjusted R² = 0.05375	
With grant				
Support	0.46850	0.0006	0.01492	0.8836
CE training	Insig.	0.9932	0.15446	0.0984
Courses	0.28966	0.0232	Insig.	0.9959
Grant	0.30257	0.0212	0.17466	0.0710
Setting	NA		0.24687	0.0118
	Adjusted R² = 0.38632		Adjusted R² = 0.07427	

working in other settings also have published more than have hospital librarians.

Research support services are far more available to academic health sciences librarians than to librarians in hospitals and other environments. Some form of institutional support was available in 81.1% of the academic health sciences settings. This is not surprising: academic institutions are expected to support research. Extrapolation from the Mularski and Bradigan data shows that the average number of publications for academic health sciences librarians with faculty status is 3.2, and for those without faculty status, 2.2 [21]. Perhaps those with faculty status have more research support services than the others. Clearly, one way to increase the research output of health sciences librarians is to encourage academic institutions to maintain and expand institutional support for research by their librarians.

Over 60% of the other institutional settings provided at least some support for research. Depending on the mission of the institution and the perceived role of librarians, it may be logical to advocate the maintenance or extension of institutional support for research by librarians.

Only 57.3% of the hospitals provided even one of the institutional supports for research. In all probability, many of the forms of institutional support considered in this study are simply not a priority in small hospitals, for librarians or for anyone else. In such instances, hospital librarians might seek support for research from sources other than their institutions. In larger hospitals, some research support services may be available, but not to the librarian. If appropriate to the mission of the library, hospital librarians may wish to lobby for access to such services. If the library exists primarily as a service to fill the information needs of the staff, the hospital may be reluctant to extend support. On the other hand, if the mission of the library is to develop and evaluate information services and programs, some research by hospital librarians, particularly evaluative research, is well within the mandate.

Although release time was the most common form of support, lack of time is often cited as a reason for low or nonexistent research productivity. The effect of release time on publication productivity of both faculty and librarians has been the subject of some recent studies. Boice and others found that librarians and faculty members have equal amounts of discretionary time that could be devoted to scholarly writing [22–23], but both groups claim they do not have time to write because they believe writing requires large blocks of uninterrupted time [24]. Both faculty members and librarians believe their commitments to teaching or library work and service prevent them from finding time to write. But when they were coached to write in frequent, brief time periods; to

make writing a priority; and to minimize distractions, their productivity and satisfaction increased.

Boice suggests that faculty members need help in using time effectively more than they need release time: "Faculty developers need to help their colleagues find ways to control felt demands on time and as a consequence, establish the personal control so vital to productivity" [25]. Although his study was confined to scholarly writing, which is more amenable to brief work periods than is traditional experimental or survey research, his model of scholarly productivity compares favorably with the type of writing done by practicing librarians.

Health sciences librarians also could benefit from assistance in developing work styles that accommodate time for research. Because research productivity can be a problem in other university departments, there may be workshops on time allocation for new faculty that librarians could attend. Professional associations also offer courses on time allocation. MLA certainly could develop such a course, tailored specifically for health sciences librarians. Time allocation also may be discussed as part of the mentoring process in some academic libraries.

Several authors have noted the existence of librarians so committed to research, writing, and publication that they do so on their own time, without any institutional support or other inducements [26–28]. Although it is reasonable to expect an academic institution to support research, it seems clear that academic health sciences librarians who expect to do research will have to plan to spend personal time working on their research and writing. For health sciences librarians working outside the academic health sciences, the commitment of personal time and resources is even more vital. Assuming that a large proportion of health sciences librarians do not now and may never receive support from their institutions, the profession needs to support these librarians' important potential contributions to research, writing, and publication.

MLA has taken the first steps toward elevating the importance of research, but it is also important for individual health sciences librarians to be convinced of the importance of research, writing, and publication and to have the skills to do high-quality work. Furthermore, it is important to convince institutions of the benefits of research by librarians. One way to demonstrate the importance of research is to prove its value in analyzing operations and contributing to practical decision making. An individual's participation in a practical research project, perhaps with a consortium, may serve to convince the institution of the benefits of the research approach to problem solving. In theory, academic health sciences librarians with faculty status should not have to convince their institutions of the importance of research. However,

not all library directors, supervisors, and colleagues are equally supportive of research. If the results of research can be shown to be of direct practical use to the institution, greater institutional support may result. This would be especially true in hospitals and other settings in which librarians are considered primarily agents of the institution.

Dalrymple and others addressed the issue of enhancing research skills among health sciences librarians; most could benefit from additional education and training in research methodology [29]. Academic health sciences librarians may be able to take advantage of free tuition and time off for courses in research methods and statistics. Hospital and corporate librarians may receive tuition reimbursement for courses at local universities. All three groups can take CE courses, particularly if they are offered at the local or regional level.

The MLA Journal Club is another mechanism through which research skills could be acquired or enhanced. Journal clubs might evolve into groups meeting to discuss ideas for research at all stages of development, from idea generation through study design and proposal writing to results and reporting. A journal club also can serve as a source of personal support for groups of library researchers. The importance of personal support in the achievement of difficult goals has been recognized increasingly throughout society.

Research committees established by a number of academic libraries sometimes promote and support research by publicizing funding opportunities and providing skills workshops. Some committees sponsor brown bag lunches that serve as support groups; others highlight research accomplishments through newsletters and small parties. Mentors and mentoring programs established by professional associations and institutions also provide support by linking individuals with similar educational backgrounds, institutional resources (or lack thereof), and job demands.

CONCLUSION

Data collected in this study demonstrate that many health sciences librarians are not engaged in research and publication. Institutional supports for research are not available to many health sciences librarians. Although about half the sample had taken a formal research course, perhaps required in library school, the majority had not had CE in research.

Multivariate analysis of the data indicated that institutional research support, successful grant application, and research courses explain 38.6% of the variation in research productivity among health sciences librarians working in academic settings. Variables identified in the study do not explain differences in research productivity among other health sciences librarians.

These results demonstrate the need to find new ways to stimulate research, writing, and publication, especially among librarians outside academic health sciences settings. The authors suggest three methods: provision of assistance in developing work styles that accommodate time for research, individual willingness to commit personal time to research, and demonstration of the importance of research through direct application of research results. If these ideas were implemented, along with recommendations for improved educational preparation, health sciences librarianship would benefit from the resulting enlarged knowledge base.

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