

Essential services of clinical librarians in academic and health care settings: A cross-sectional study

Rebecca Carlson, MLS, AHIP

Sarah Towner Wright, MLS

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ABSTRACT

This paper provides a comprehensive summary of clinical librarian service models in the US, Canada, and the UK from a cross-sectional study. An online survey received 182 responses from clinical librarians in hospital (62%), academic (26%), and other (10%) libraries. These clinical librarians shared the services they provide, patrons they work with, and their perceptions of the value they add to clinical environments.

Overall, this study quantifies the services offered most frequently by clinical librarians, the services felt to be most valuable, and the variety of health care clientele whom clinical librarians serve. These findings have implications for current clinical librarians, libraries and health care institutions, and for those who may become clinical librarians in the future.

KEYWORDS: clinical librarians; hospital librarians; health sciences librarianship

AUTHORS

Rebecca Carlson, MLS, AHIP (rcarlson@unc.edu) is Health Sciences Librarian and Liaison to the Eshelman School of Pharmacy, at the University of North Carolina at Chapel Hill, Health Sciences Library, 335 S. Columbia St CB 7585, Chapel Hill, NC, USA. ORCID 0000-0002-4380-8435

Sarah Towner Wright, MLS (wrightst@med.unc.edu) is Head, Clinical and Statewide Engagement and Liaison to the School of Medicine at the University of North Carolina at Chapel Hill, Health Sciences Library, 335 S. Columbia St CB 7585, Chapel Hill, NC, USA. ORCID 0000-0003-2076-8343

INTRODUCTION

Clinical librarianship is a varied and evolving profession. In 2003, Winning described the clinical librarian role as: “to support clinical decision-making and/or education by providing timely, quality-filtered information to clinicians,”¹ with clinical librarians commonly supporting a range of healthcare information needs. Historically, clinical librarianship was created as a subspecialty of medical librarianship to better meet the information needs of clinicians. Early definitions of clinical librarians from the 1970s and 1980s referred to them as embedded medical literature specialists.² For this study, a clinical librarian was broadly defined as any medical librarian or library staff member providing information services to healthcare providers and/or clinical departments.

Previous studies have examined the roles of clinical librarians in health care³⁻⁷, shown the benefits of librarians being embedded at the point of care⁸⁻¹⁰, and shared how they are involved in clinical education^{11,12}, but the majority of publications have done so from the perspective of a single institution. Studies that have gathered multi-institutional data are mostly older and/or limited in scope; so, while they provide additional information, they do not present a complete and current picture of the clinical librarian field.¹³⁻¹⁸ Existing studies provide evidence-based examples of some roles and services, but there is a lack of current literature showing the entire breadth and depth of clinical librarianship.

A synthesis of the current literature in a literature review is possible but would only provide a retrospective look at the field and would only represent those institutions and librarians with published papers, excluding institutions and countries not represented in the literature. To provide summary data on today’s clinical librarians and their roles and services in health care, a new, broadly inclusive study was needed. The following paper provides a unique analysis of current trends in clinical librarian services, based on an international survey of clinical librarianship. This study also complements new research on hospital-based health care providers’ perceptions of clinical librarian services.¹⁹

METHODS

The goals of the study were to examine current clinical librarians’ service models, areas of focus, and work settings, and then to report on librarians’ perceptions of value added to clinical environments by their work. To do this, a 12-question quantitative survey instrument was developed. The survey questions were devised

from the common roles and services of clinical librarians represented in the literature and in prior surveys distributed to medical librarians in the United States¹⁵ and United Kingdom.¹⁸ The survey was created using Qualtrics survey software (Qualtrics, Provo, UT). Pilot testing of survey questions and logic was completed with clinical librarians at the authors' institution and peer feedback was incorporated into the final instrument. The survey instrument was reviewed by the University of North Carolina at Chapel Hill Office of Human Research Ethics and the study (#18-0311) was determined to be exempt from further institutional review board review.

For the purposes of the survey, the target population of clinical librarians was defined as those who act as a liaison to health care providers and/or clinical departments in any capacity, and this definition was provided to respondents as the first survey question. The survey collected data on librarian participation in the following areas: clinical team rounding, grand rounds, case conferences, morbidity and mortality conferences, department meetings, research committees or councils, library instruction, expert searching, and research involvement. Librarians identified the clinical teams served, the ratio of clinical librarians to all health sciences librarians at the institution, the average number of clinical departments served, and their geographic locations by country.

Participants were invited to contribute to this cross-sectional study through completion of the survey. The survey instrument and information about the study were distributed online through medical librarian listservs used by clinical librarians in the United States, Canada, and United Kingdom as well as other international medical librarian listservs covering countries across Europe, Africa, and South America. The survey link was also posted on Twitter using the #medlibs and #canmedlibs hashtags, commonly used by medical librarians in the US, UK, and Canada, to bring the tweets to the attention of clinical librarians. The survey requested responses from any librarian who was currently providing clinical services in any health-oriented library setting. Since a total number of all those eligible to participate in the study is unknown, there is unfortunately no way to calculate the response rate for the survey.

The survey was available between February 22, 2018 and March 25, 2018. At the end of the survey period, raw survey data were viewed in Qualtrics and customized reports were created to view the numbers and percentages of question responses. The data were then analyzed using SPSS statistical software (IBM SPSS Statistics for

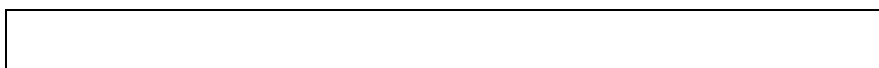
Windows, Version 24 Armonk, NY). Whenever possible, the data were separated by library type to show the differences in responses between librarians working in academic, hospital, and governmental/other types of libraries.

RESULTS

During the one-month survey period, 338 people opened the survey and 318 responded to the initial identification question. The survey questions are available in Appendix 1. The first question asked librarians whether they identified as a clinical librarian or were performing clinical librarian work, in order to confirm the accuracy of the study sample; 265 (83%) responded Yes and were directed to the remainder of the survey, and 53 (17%) responded No and did not receive access to the other survey questions. Of the 265 people who received access to all survey questions, 83 people (31%) partially completed the survey by only answering one or two questions and were dropped from the analyses, leaving 182 respondents (69%) on whom all data analyses are based.

Demographics

The first goal of this cross-sectional study was to understand clinical librarians' work environments, so respondents were asked about the type of library they work in, the number of other health librarians also working there, and the country where they live and work. Librarians were asked to self-identify with one of these categories: academic libraries, hospital libraries, or governmental/other libraries. Clinical librarians can work within a wide range of environments and with various types of patrons, regardless of their organization or type, but this categorization was designed to allow for data analysis by broad library category. Overall, 62% of responses were from individuals at hospital libraries, 26% from individuals at academic libraries, and the remaining 10% from individuals at other types of libraries, including government agencies and research organizations (Table 1). The libraries varied in size, with 30% of librarians indicating that they were the sole full-time equivalent (FTE) health sciences library staff member, 52% indicating 2-10 FTE, 8% 11-20 FTE, 7% 21-50 FTE, and 1% 51-100 FTE. The approximate average number of health sciences library staff at an institution from these data is 8.6 FTE.



Library Type	N=182	%
Hospital Library – Academic Affiliation	74	41.1%
Hospital Library – No Academic Affiliation	39	21.7%
Academic Library – Health care Affiliation	45	25.0%
Academic Library – No Health care Affiliation	3	1.7%
Government Library	8	4.4%
Other	11	6.1%

TABLE 1: Library Types

Respondents were asked how many of their colleagues, if any, were performing clinical librarian work at their institutions. There were 44% who said they were the only one with clinical librarian responsibilities, 49% who said 2-5 others, 5% who said 6-10 others, and 1% who said 11 or more other FTEs had clinical librarian work. On average, approximately 3.2 FTE librarians were performing clinical duties per health sciences library. When looking at responses by type of institution, the hospital and government/other special health libraries were more likely to have smaller clinical librarian staffs than academic libraries. Most academic libraries (56%) have 2-5 clinical librarians and only 29% of academic librarians identified as a solo clinical librarian. By contrast, 48% of hospital librarians and 55% of government/other librarians identified as the only one performing clinical librarian work at their institution (Table 2).

Number of Clinical Librarians per Institution	N=182	%	Hospital Library	Academic Library	Gov/Other Library
1	80	44.4%	48.7%	29.2%	55.6%
2-5	89	49.4%	47.8%	56.2%	44.4%
6-10	9	5.0%	2.6%	12.5%	0.0%
11+	2	1.2%	0.9%	2.1%	0.0%
		%			

Number of Health Sciences Library Staff per Institution			Hospital Library	Academic Library	Gov/Other Library
	N=182				
1	54	30.2%	35.4%	10.4%	47.1%
2-10	93	52.0%	56.6%	43.8%	47.0%
11-20	16	8.9%	5.3%	20.8%	0.0%
21-50	13	7.3%	2.7%	18.8%	5.9%
51-100	3	1.7%	0.0%	6.2%	0.0%
Country	N=182	%	Hospital Library	Academic Library	Gov/Other Library
United States	92	51.7%	38.9%	75.0%	63.2%
Canada	25	14.0%	19.5%	4.2%	5.3%
United Kingdom	21	11.8%	17.7%	2.1%	0.0%
New Zealand	8	4.5%	5.3%	2.1%	5.3%
Spain	6	3.4%	3.6%	2.1%	5.3%
Netherlands	5	2.8%	2.7%	4.2%	0.0%
Australia	4	2.2%	3.5%	0.0%	0.0%
Italy	3	1.7%	0.0%	2.1%	10.5%
Norway	2	1.1%	0.0%	0.0%	0.0%
Brazil	2	1.1%	0.9%	2.1%	0.0%
Other	9	5.1%	7.9%	6.1%	10.4%

TABLE 2: Librarian Demographics

Clinical librarians responded from many countries, including the United States, Canada, United Kingdom, New Zealand, Spain, Netherlands, Australia, Italy, Norway, and Brazil, with the most responses from the United States (51%), then Canada (14%) and the United Kingdom (11%). Of the respondents identifying as academic librarians, 75% were working in the United States and less than 5% reported working in each of

the other countries from which responses were received. Responses by government/other health librarians were similar, with 63% working in the United States, 10% working in Italy, and smaller percentages working in other countries. However, there were fewer responses from hospital librarians in the United States (38%), and even less from Canada (19%) and the United Kingdom (17%).

Among hospital library staff, those in the United Kingdom or Canada tended to have higher numbers of library staff and clinical librarians working at their institution as compared to those in the United States. In US hospital libraries, 39% were the only full-time equivalent (FTE) health sciences library staff and 52% were the only library staff performing clinical librarian work. For UK and Canadian hospital libraries, only 21% had only one FTE health sciences library staff member and only 38% were the only library staff performing clinical librarian work. No US hospital library had more than 20 FTE staff and only 4% of libraries had more than 10 FTE, while 14% of UK and Canadian libraries had more than 10 FTE and 7% had more than 20 FTE.

Services

A second goal of the study was to determine current clinical librarians' roles and services in health care. Respondents were asked how often they provide, attend, or participate in clinical librarian services. They were provided with a list of services commonly reported in the literature and could also provide additional options via a free text field. These findings report which services are common for the clinical librarians surveyed and the frequency of these services. The services most often offered by clinical librarians are expert literature searching (98%), one-on-one instruction for clinical patrons (97%), topic or skill-based workshops (95%), and creation of LibGuides or other forms of customized bibliographies for patrons (84%). These services, which are a regular part of work for many types of librarians in medical, academic, research, and special libraries, seem to be offered by almost all clinical librarians. When service data were analyzed by library type and by location, almost all librarians reported regularly offering expert literature searching, providing one-on-one instruction consultations, and teaching workshops, regardless of the type of institution or country location.

Respondents were also asked about engagement with the groups and departments they serve, how they are embedded with departments, and the types of meetings they attend. The responses were varied, but a majority of librarians reported

regular involvement with clinical departments and groups through attending department meetings (73%), serving as members of research committees or research councils (70%), organizing or attending journal clubs (59%), joining departments for grand rounds (55%), and participating in departmental or divisional case conferences (51%). Some of these embedded librarian activities are also common across other types of public services librarian positions (e.g. departmental meetings, educational events, and research committees), while others are more unique to clinical librarians, such as meetings to discuss patient cases and complications.

Other clinical activities were offered by fewer clinical librarians: 46% participate in patient rounding with clinical teams, 32% provide office hours in health care settings, and 30% attend morbidity and mortality conferences. Also, over 20 clinical librarians mentioned additional services that they are providing through a free text response. These additional services included proctoring exams, providing outreach, participating in morning report and patient handovers, providing consumer health information, and hosting special events.

Additionally, clinical librarians were asked how frequently they provided their various services: daily, weekly, monthly, or more rarely. In many cases, frequency correlated with popularity and the services offered by the highest percentages of librarians were more likely to be provided daily or weekly (Table 3). Expert literature searching was the most popular service provided, with 98% of clinical librarians offering it: 42% of respondents reported completing this service daily and 83% reported doing it at least once a week (Table 3). One-on-one instruction, another top service, was also provided at least once a week by 42% of librarians. However, instructional workshops for health care providers and trainees are offered by 95% of clinical librarians, but 78% of all respondents teach once a month or less. Interestingly, while only 46% of respondents reported any involvement in clinical team rounding, approximately 40% of those who are involved in rounding do so at least once a week.

Overall, clinician and group-based activities, such as department meetings, committee meetings, grand rounds, and journal clubs, had librarians involved monthly or even less often. Activities that are more librarian centric, such as literature searching and librarian-offered consultations and instruction, were reported much more frequently, in keeping with the model of one librarian working with many clinical patrons (Table 3).

N=182					
Service Name	Rarely	Monthly	Weekly	Daily	Total
Expert literature searching	4.5%	9.5%	41.9%	42.5%	98.3%
One-on-one instruction	15.5%	39.4%	32.2%	10.6%	97.8%
Instructional workshops	38.0%	40.2%	15.7%	1.1%	95.0%
LibGuides or similar	37.0%	31.4%	17.3%	8.7%	84.4%
Department meetings	41.2%	22.3%	8.9%	0.6%	73.1%
Research committees or councils	33.9%	33.4%	2.3%	0.6%	70.1%
Journal clubs	37.0%	16.8%	5.2%	0.0%	59.0%
Grand rounds	37.2%	11.7%	6.9%	0.0%	55.8%
Case conferences	26.8%	12.8%	11.1%	0.0%	50.6%
Clinical team rounding	19.5%	6.8%	18.4%	1.1%	46.0%
Clinical office hours	14.9%	4.2%	6.6%	7.1%	32.7%
Morbidity & mortality conferences	20.4%	4.6%	5.2%	0.0%	30.2%

TABLE 3: Frequency of Services

Note: Columns are shaded to more easily show the frequency; the higher the frequency the darker the shading.

Clinical Librarian Constituents

Most clinical librarians reported providing services to physicians (86%) and medical trainees: residents (74%), medical students (64%), and fellows (47%). Clinical librarians also routinely provide library services to nurses (78%) and nursing students (45%), allied health professionals (65%), pharmacists or pharmacy staff (58%), and administrators (49%). Only 17% of clinical librarians work with patients, family members, or other health care consumers, and only a few clinical librarians reported working with other types of students (5%) or other health care providers (10%) (Table 4).

There were some differences in the types of patrons with whom librarians reported working, depending on the librarians' type of library or institution. More hospital librarians reported working with physicians, residents, nurses, nursing students,

allied health professionals, pharmacists, and administrators. Ninety-two percent of hospital librarians work with nurses while only 47% of academic librarians do. Sixty-nine percent of hospital librarians work with pharmacists compared with 37% of academic librarians. Services to fellows was the only category for which more academic library personnel (56%) reported working with a patron group than did hospital librarians (48%). Similarly, 42% of government/other librarians reported working with patrons or families compared to 15% of hospital librarians and only 8% of academic librarians (Table 4).

Clinical librarians work with a wide variety of medical departments, but there are a few departments that are common across all respondents: 61% of clinical librarians work with an internal medicine department, 46% with a surgical department, 45% with a pediatrics department, and 43% with an obstetrics or gynecology department. Librarians also reported working with emergency (38%), psychiatry (38%), oncology (34%), ambulatory care (31%), and anesthesiology (30%) departments. In addition to these patterns of common departmental liaisons, 60% of librarians identified through free-text responses other, unique groups for which they provide clinical services. These constituents vary in roles, clinical specialities and disciplines, and types of healthcare facilities and show the breadth of clinical librarian work and the relevance of their work to a broad range of types of health care providers.

Almost all clinical librarians serve multiple clinical departments or groups: 59% serve more than five departments, 31% serve two to five departments, and only 8% serve just one department or group. This is to be expected from the high percentages of librarians working with different types of clinical patrons and the high numbers of respondents who reported being the only, or one of a few, clinical librarians at their institution.

When it comes to the type of library or institution within which clinical librarians work, hospital librarians are serving the most departments or groups: 70% of hospital librarians report working with more than five departments, as compared to 40% of academic and 44% of government/other librarians. This could be due to the lower reported numbers of hospital library personnel per institution, with fewer librarians available overall leading to more groups for which each librarian is responsible (Table 4). Or, this could be due to the sampling of clinical librarians in the study.

Patron Types	N=182	%	Hospital Library	Academic Library	Gov/Other Library
Physicians	158	86.8%	92.0%	75.0%	84.2%
Nurses	143	78.6%	92.0%	47.9%	84.2%
Residents	136	74.7%	77.0%	75.0%	68.4%
Allied Health Professionals	120	65.9%	77.9%	39.6%	68.4%
Medical Students	117	64.3%	65.5%	66.7%	57.9%
Pharmacists/Pharmacy Staff	106	58.2%	69.0%	37.5%	52.6%
Administrators	90	49.5%	56.6%	31.3%	47.4%
Fellows	87	47.8%	48.7%	56.3%	21.1%
Nursing Students	82	45.1%	51.3%	33.3%	42.1%
Patients/Families	31	17.0%	15.9%	8.3%	42.1%
Others	19	10.4%	12.4%	22.9%	5.3%
Department/Specialty	N=182	%	Hospital Library	Academic Library	Gov/Other Library
Internal Medicine	112	61.5%	61.1%	56.3%	57.9%
Surgery	85	46.7%	52.2%	31.3%	36.8%
Pediatrics	83	45.6%	46.9%	45.8%	31.6%
Obstetrics/Gynecology	79	43.4%	45.1%	45.8%	21.1%
Intensive Care	78	42.9%	48.7%	27.1%	47.4%
Emergency Department	70	38.5%	43.4%	29.2%	36.8%
Psychiatry	70	38.5%	38.9%	33.3%	47.4%
Oncology	62	34.1%	38.1%	29.2%	26.3%
Ambulatory Care	58	31.9%	38.1%	20.8%	26.3%
Anesthesiology	55	30.2%	35.4%	22.9%	21.1%
Others (<10% ea.)	110	60.2%	n/a	n/a	n/a
Number of Departments	N=182	%	Hospital Library	Academic Library	Gov/Other Library
One	14	8.1%	6.4%	12.8%	5.6%

Two or Three	26	14.9%	6.4%	25.5%	38.9%
Four or Five	30	17.2%	16.6%	21.3%	11.1%
More than Five	104	59.8%	70.6%	40.4%	44.4%

TABLE 4: Type of Patrons

Perceived Value

The third goal of this study was to identify the services clinical librarians perceive as most valuable to, or have the highest impact on, their patrons. In considering their impact, 88% of clinical librarians think that they save clinicians time, 86% believe they advance evidence-based practice (EBP), and 83% feel they contribute to the professional development of health care providers. The importance of health care education to clinical librarians is clear: 75% of clinical librarians think that they increase the education or teaching skills of clinicians and 72% believe they add value to the education of the next generation of health care providers. Clinical librarians also value their services at the point of care: 73% of clinical librarians believe that they improve patient or health care outcomes, 68% assist in clinical decision making, and 48% think they decrease health care costs. Additionally, 59% of clinical librarians believe that they are impacting clinical teams positively by addressing otherwise unmet needs (Table 5).

Clinical librarians have slightly different perceptions of their services' impact, depending on the type of library in which they work. Hospital librarians see the greatest impact of their services in saving clinicians time (92%), advancing evidence-based practice (90%), and contributing to clinicians' professional development (87%) (Table 5). Most academic librarians focused on the perceived value of their work in educating future health care providers (91%), advancing EBP (85%), and saving clinicians time (83%). For government or other clinical librarians, contributing to clinicians' professional development was perceived as having the highest impact (94%), followed by saving clinicians time and improving patient or health care outcomes (both 84%) (Table 5).

Value	N=182	%	Hospital Library	Academic Library	Gov/Other Library
Save clinicians time	161	88.5%	92.9%	83.3%	84.2%

Advance EBP	157	86.3%	90.3%	85.4%	73.7%
Contribute to professional development	152	83.5%	87.6%	72.9%	94.7%
Increase clinicians' education skills	137	75.3%	75.2%	77.1%	78.9%
Improve outcomes	133	73.1%	80.5%	54.2%	84.2%
Educate future providers	131	72.0%	64.6%	91.7%	73.7%
Assist in clinical decision making	125	68.7%	74.3%	58.3%	68.4%
Address unmet needs	108	59.3%	67.3%	41.7%	63.2%
Decrease healthcare costs	89	48.9%	59.3%	25.0%	52.6%

TABLE 5: Perceived Value of Services

Using the same list of 13 service options as in previous questions, respondents were asked to rank their services in order of their perceived value or usefulness to their patrons. Services ranked in the top three of all service options were considered most valuable. Overall, the most frequently offered services—expert literature searching, one-on-one instruction, and instructional workshops—were also considered to be of highest perceived value (Table 6). Literature searching was ranked highly valuable by 85% of librarians and as the overall most valuable service by 57%, one-on-one instruction was ranked highly useful by 70%, and instructional workshops by 53%. The same three services were ranked as the most useful across the various types of libraries and locations of librarians represented. Other activities, while offered more frequently, were perceived as less useful; neither research committees/councils nor journal clubs received any responses ranking them as most useful out of all services, and they were only selected as highly useful by 9% (research committees) and 8% (journal clubs) of any respondents. The services that were perceived as the lowest value overall were grand rounds and morbidity & mortality conferences; less than 3% of respondents ranked either of them as a highly appreciated service.

Service Ranked Highly Valuable	Aggregate Percent	Hospital Library	Academic Library	Gov/Other Library
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Expert literature searching	85.7%	87.5%	87.5%	79.0%
One-on-one instruction	70.9%	70.0%	85.4%	47.4%
Instructional workshops	53.3%	48.7%	75.0%	31.7%
Clinical team rounding	14.8%	13.3%	12.5%	31.6%
Research committees or councils	9.8%	9.7%	8.4%	10.8%
Journal clubs	8.2%	8.9%	6.3%	10.5%
Case conferences	6.0%	10.6%	8.4%	5.3%
LibGuides or similar	9.8%	10.6%	10.5%	5.3%
Clinical office hours	2.7%	4.8%	2.1%	10.6%
Department meetings	4.9%	15.9%	2.1%	5.3%
Grand rounds	2.6%	4.5%	0.0%	0.0%
Morbidity & mortality conferences	2.2%	8.0%	0.0%	0.0%

TABLE 6: Perceived Value to Patrons

DISCUSSION

These results can be used to give creative practice ideas to current clinical librarians, help justify a clinical librarian service to management, connect clinical librarians at different types of institutions around shared clinical services, and assist new clinical librarians in providing meaningful services to health care professionals. This study provides additional evidence to the work of Brettle in 2016 and Brian in 2018 on clinical librarian service impact^{9,20} and so will further justify an investment in clinical librarian services. It connects to the earlier work of Lyons¹⁵ and others^{5,7} on the

experiences of clinical librarians working with healthcare providers and shows current librarians what the field looks like at a macro level while also providing high-level data to new or future librarians. Specific to hospital libraries, the data from this survey show how clinical hospital librarians have continued to adapt and expand their services since Thibodeau and Funk's 1989-2006 study.²¹ It also provides a contrast to the upcoming study on hospital healthcare providers' perceptions of clinical librarian services whose protocol was published in 2020¹⁹; future work can address if these perceptions align.

For non-clinical librarians and libraries who do not serve clinicians, it is still useful to know how common librarian services such as literature searching and instruction are being provided to these patron populations. Clinical librarians can be thought of as another type of liaison or embedded librarian, which are common roles across academic disciplines.²² These data make an interesting comparison to studies on the roles of liaison librarians, which also focus on instruction and literature searching as key roles for librarians.^{23,24} Hopefully this study may lead to opportunities for comparisons between different types of librarians working in information services roles.

Overall, the results of this study demonstrate the similarities among clinical librarians working across different types of institutions and health care systems and provide an update to past surveys of this population in 2005 and 2015.^{15,18} As a group, clinical librarians provide similar services and find a consistent set of services to be the most valuable and impactful to their patrons, even across countries and types of library environments. For new or aspiring clinical librarians, these results demonstrate which essential services are commonly offered to clinical patrons and can assist in identify gaps in their knowledge or initial services to prioritize their training and work. For experienced clinical librarians, there are opportunities to work more closely together to assist and learn from each other via professional organizations, continuing education, and collaborative practice. For example, as literature searching is an almost uniform service provided by clinical librarians, a collective repository of search hedges for common populations, conditions, interventions, and outcomes could be very useful, particularly for the almost 50% of clinical librarians at hospital, governmental, or other institutions with only one or two clinical librarians. This could save librarians time in developing new search terms for common medical intervention questions, particularly given that many clinical librarians are serving several medical departments. It would also be a valuable resource for new clinical librarians to use in verifying their own search development.

The study also shows the clinical librarian services that are less common or that are more specialized. Only 30% of librarians reported attending morbidity and mortality conferences and 46% are participating in any type of clinical rounding. Patient rounds and morbidity/mortality conferences are unique to the clinical librarian role and are the focus of several previous studies⁸⁻¹⁰, so it is of interest that only one third to half of clinical librarians are currently engaged in these activities. One possible reason for this may be that these services are time consuming while also limited to one team or department as many clinical librarians report working alone or with a very small team of clinical librarians. If a clinical librarian is attempting to provide a variety of services and meet the needs of many patrons, then they are more likely to prioritize those services that take less time or that benefit the most people. Also, most librarians did not rank these services as highly valuable to their patrons: only 2% of librarians ranked morbidity and mortality conferences as a most valuable service and only 14% ranked rounding as most valuable. However, future research on this is needed to provide a definitive answer.

These data are also useful for identifying gaps in involvement with certain groups of non-medicine clinicians. While clinical librarians are often involved with internal medicine specialties, few librarians reported working with other health care departments: only 4% percent reported working with dentistry, urology, or rehabilitation, and 3% percent with pharmacy, radiology, or dermatology. This is in contrast to the number of librarians who reported routinely working with allied health professionals (65%) and pharmacists or pharmacy staff (58%). This might mean that librarians are not working within organizations that structure clinicians by speciality or that librarians are not viewing the health care organization structure in this way.

The lack of clinical librarian support beyond medicine is particularly noteworthy with academic librarian respondents. If, as reported, most academic clinical librarians are only working with physicians, residents, medical students, and medical fellows, this could mean other health care providers (e.g. pharmacists, dentists, or nurses) are not receiving ongoing clinical librarian support for their work in academic medical centers. Or, perhaps there are just more physicians and medicine trainees than other types of providers and trainees in academic medical centers.

Hospital librarians and government/other librarians are providing services more evenly across disciplines, however the highest percentages receiving services are still the physicians and medicine trainees (Table 4). It is unknown whether this in response

to the actual demographics of healthcare providers or whether clinical librarians are missing opportunities to support the work of non-physician healthcare workers. There are some studies on the impact of librarians to these non-physician disciplines²⁵, but this is an opportunity for future research.

This study also gathered responses on librarians' perceptions of how they add value to the clinical environment and to their clinical patrons. The perceived value added by clinical librarians aligned with their services offered; almost every librarian reported providing expert literature searching, one-on-one instruction, and instructional workshops and correspondingly, the top areas where librarians feel they add value are in saving clinicians time, advancing evidence-based practice, and contributing to education and professional development. Expert literature searching by clinical librarians can save clinicians time while supporting evidence-based practice and both types of instruction can contribute to trainees' education and practitioners' continuing professional development. Future studies can research this further and compare healthcare providers' perceptions with librarians' perceptions of clinical librarian services or do further, qualitative analysis on how librarians perceive their work.

Another research opportunity is to further examine the differences in clinical librarian services by healthcare model. While this study captured clinical librarian experiences across various countries, there were not enough data captured to draw conclusions about if or how librarians' services may vary in response to the healthcare systems in that country. For example, a future study could compare the work of clinical librarians across countries with different types of national health systems or compare clinical librarians in these countries with the United States or another country with both public and private healthcare options.

Limitations

Additionally, this study captured some data from respondents who self-identified as non-clinical librarians at the start of the survey. Before exiting the survey, these respondents were asked why they do not provide clinical librarian services. Out of 46 total responses recorded, 24% indicated that their institution does not serve clinical patrons, 17% reported that another librarian at their institution has clinical librarian responsibilities instead, another 17% said that they have insufficient staff to offer clinical services, and 9% responded that their institution plans to offer clinical librarian services in the future. The other 33% of respondents gave various reasons through open

ended text, including 9% who described providing some services to clinical patrons, but were unsure if the authors' definition of clinical librarians applied to them.

Therefore, one potential limitation of this study is the exclusion of some clinical librarians who did not self-identify as such, thus leading to them not responding to the full survey and being included in the data analysis. This shows the need for a clear, common definition for clinical librarianship that includes all librarians who are providing services to any frontline healthcare workers. This standard definition would be useful for future research as well as to be inclusive of all practitioners in the field.

Another limitation is the number of respondents who answered only one or two survey questions and were dropped from the data analysis. While 265 people identified as clinical librarians in the initial question and received access to all survey questions, 83 people went on to answer only one or two of the survey questions, and these responses were not included in any analyses. Also, the number of clinical librarians practicing in the field is not currently known, so it is unclear how large of a sample size this study represents.

Finally, while this study represented current practice before the COVID-19 pandemic, clinical librarianship at all types of institutions is now changing rapidly to adapt to new service models and budgetary limitations. Clinical librarianship may continue to change in the coming months and years, and it is unknown how much future practice will reflect the experiences collected in this study. However, the librarian services perceived in this survey to be high value and high impact by clinical librarians can help guide other clinical librarians in adapting their services during and after the COVID-19 pandemic.

Despite these limitations, this study still provides a valuable cross-sectional view of clinical librarians from several countries, showing the work of clinical librarians in different types of institutions, and providing insight into the importance that librarians perceive in their specific job duties. This study provides initial work that others can build on in researching more focused aspects of clinical librarian services and the value they add to health care.

CONCLUSION

These findings have implications for clinical librarians, health sciences libraries and the health care and academic institutions to which they belong, educational institutions training future clinical librarians, and those who may become clinical librarians in the

future. Health sciences librarians can use this information to become better informed about the current state of clinical librarian services overall or to help guide decisions about clinical librarian services at their own institution. Knowledge gained about the state of this highly specialized library science field can also inform educational offerings for future clinical librarians. There is a continued need for more research on clinical librarian services, including studies focused on librarians at specific institutions or working in specific environments, studies countering the librarian perceptions of their services with the clinicians' point of view on clinical library services, and studies evaluating the services provided and their success by library measures and by clinical outcomes.

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Disclosures

The authors have no relevant financial interests or benefits to disclose.

Data Availability Statement

The poster presented at MLA 2018 (<https://doi.org/10.17615/0d7a-6180>) is available in an online institutional repository at https://cdr.lib.unc.edu/concern/scholarly_works/cf95jd382.

The dataset and appendix are available in an online institutional repository at https://cdr.lib.unc.edu/concern/data_sets/kd17d080g. To use the data associated with this publication for research purposes, please contact the authors.

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APPENDIX: SURVEY QUESTIONS

A Survey of Clinical Librarians' Activities and Impact

1. Do you provide clinical librarian services, where you are a liaison to healthcare providers and/or clinical departments?
 - Yes
 - No
2. Do you provide clinical librarian services, where you are a liaison to healthcare providers and/or clinical departments?
 - Yes
 - No
3. If you selected no, why do you not provide clinical librarian services?
 - Another librarian(s) has that responsibility
 - Our library does not serve clinical patrons
 - We have insufficient staff to offer clinical services
 - We plan to in the future
 - Other: _____
4. How often do you provide, attend, or participate in the following clinical librarian services? Select all that apply.
 - Clinical team rounding
 - Grand rounds
 - Morbidity & mortality conferences
 - Department/divisional case conferences
 - Department meetings
 - Research committees/councils

- Journal clubs
- Clinical office hours
- Instructional workshops for students, residents, or professional staff
- One-on-one instruction for students, residents, or professional staff
- Expert literature searching
- Libguides or customized bibliographies
- Other clinical activities: _____

Scale: Once a day, A few times a week, Once a week, A few times a month, Once a month, A few times a year, Rarely, Never

5. For the services you are currently providing or participating in, rank them in order of most valuable (appreciated by or useful to patrons), with #1 as the most valued:

- Clinical team rounding
- Grant rounds
- Morbidity & mortality conferences
- Department/divisional case conferences
- Department meetings
- Research committees/councils
- Journal clubs
- Clinical office hours
- Instructional workshops for students, residents, or professional staff
- One-on-one instruction for students, residents or professional staff
- Expert literature searching
- Libguides or customized bibliographies
- Other clinical activities: _____

6. How many clinical departments or groups do you serve?

- 1
- 2-3
- 4-5
- More than 5

7. To which clinical patrons do you routinely provide clinical librarian services?

Select all that apply.

- Administration

- Allied Health Professionals
- Fellows
- Medical Students
- Nurses
- Nursing Students
- Patients/Families
- Pharmacists/Pharmacy Staff
- Physicians
- Residents
- Other: _____

8. With which clinical departments do you routinely work? Select all that apply.

- Ambulatory Care
- Anesthesiology
- Emergency Department
- Intensive Care
- Internal Medicine
- Obstetrics/Gynecology
- Oncology
- Pediatrics
- Psychiatry
- Surgery
- Other Departments or Subspecialties not listed above: _____

9. How do you think your clinical librarian services assist the clinical team(s)?

Select all that apply.

- I save clinicians time
- I increase education/teaching skills of clinicians
- I educate the next generation of health care providers
- I advance evidence-based practice
- I assist in clinical decision making
- I improve patient/healthcare outcomes
- I decrease healthcare costs
- I address unmet needs

- I contribute to professional development
- Other: _____

10. What type of health sciences library do you work in?

- Hospital library without an academic affiliation
- Hospital library with an academic affiliation
- Academic library with a healthcare affiliation
- Academic library with a healthcare affiliation
- Academic library without a healthcare affiliation
- Government agency/organization
- Other: _____

11. Approximately how many full-time health sciences library staff work in your library?

- 1
- 2-10
- 11-20
- 21-50
- Over 100

12. Approximately how many library staff members are performing clinical librarian work in your library?

- 1
- 2-5
- 6-10
- 11-20
- More than 20

13. Where is your institution located?

- United States
- Canada
- United Kingdom
- Other: _____

14. How many years have you provided clinical librarian services?

- 0-1
- 2-5
- 6-10

- 11-20
- More than 20