



Supporting Medical Research in Nigeria: Uncovering the Gaps in Librarians' Competencies

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Abstract

Received: 12 Mar 2025

Accepted: 09 Jul 2025

Keywords:

Research support
Medical research
Medical libraries
Librarians
Competencies

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Introduction: The introduction of research support services in medical and health libraries worldwide aims to provide the necessary tools and resources that assist researchers in planning, conducting, and disseminating their research effectively. This study aimed to survey the research support services and the competencies of medical librarians to provide such services in medical libraries in South-South, Nigeria.

Methods: The survey method was employed, using a sample of the population, all registered medical librarians from 11 government-owned universities with colleges of medicine or health sciences colleges in the six South-South states of Nigeria. The total enumerative sampling technique covered 47 medical librarians in the institutions. The instrument used for data collection was a questionnaire. The questionnaire was a 4-point scale instrument adapted from the Medical Library Association Competency Standards. Data were analyzed using simple percentage/frequency counts and statistical mean.

Results: The research services provided to support medical research in South-South, Nigeria, are limited to basic library services such as circulation and lending services, while medical librarians are competent in the provision of basic library services, such as effectively finding printed resources, in addition to assessing information needs and selecting information resources.

Conclusion: Medical librarians contribute to medical research; however, they need to be competent to support medical researchers in medicine more than anything else. The researchers recommend that librarians attend regular training programs to improve their proficiency in critical research areas.

Introduction

Research support services are activities from any library that assist in research and scholarly endeavors (1). They are also regarded as a set of services, tools, and facilities provided by libraries that aim to facilitate research tasks (2). Research support

involves any service a library offers users, either by identifying financial support, helping in literature reviews, providing information about projects or research groups, helping with bibliometric and research impact assessment, providing data analysis



support, or advising on copyright. In addition, they encompass planning, conducting, preserving, and disseminating research through various tools and resources (3).

Research support services, as services and tools that aim to facilitate research tasks (4,2), can range from advice and services related to research grants, ethics and integrity, research performance, and publications and outputs, to support for data-driven research and the entire research lifecycle (4, 5). In addition, Si et al. categorized research support services into research data management, open access, scholarly publishing, research impact measurement, research guides, research consultation, and recommendations for research tools (6). In general, the concept of library research support services refers to all of the resources, services, and tools deployed by libraries to offer assistance to researchers when carrying out their research activities.

The paradigm shift in the types of library services today also applies to medical libraries. Available studies suggest that research support services available in medical libraries in developed countries like Canada include systematic review support services, grants, data management, open access, and repositories, as well as the creation of new library research support positions. Other research support services are bibliometrics/altmetrics, data management services, geographic information systems, and patents (7, 8). Han reported from a study of 52 medical libraries in Korea that user education (98.1%) was the most common research service. Information services follow this: (46.2%), institutional repository (32.7%), dissertation preparation guide (30.8%), information retrieval service (26.9%), and manuscript proofreading service (15.4%) (9). According to Chen and Zhou, research support services at the universities of Traditional Chinese Medicine in China include planning, project support, publication, and electronic preservation in supporting research into holistic and indigenous medicine (10). Similarly, a literature search from ten databases to identify research services among Canadian medical libraries revealed systematic review support, grants, data

management, open access, and repositories (7).

In Nigeria, medical libraries are still evolving in terms of the types of services offered. In Nigerian academic libraries. Okunoye and Okere reported that services meant to contribute to research excellence for the university community were training services and publishing services (11). Similarly, Adeyeye and Oladokun stated that data mining, data management, and scholarly communication are emerging services that can support researchers (12). According to Popoola, Uzoagba, and Rabi, medical libraries do not provide specialized services to health care professionals, and medical librarians in Nigeria have beginner-level knowledge of systematic reviews and evidence-based medicine and rarely organize training for library users (13).

With the advancements in digital technologies and influx of these new services, the role of medical librarians has changed from just proving information resources to the provision of evidence-based information that support patient care and education, providing embedded functions and playing the role of emerging technologies librarians, all of which has the possibilities of enhancing the quality of care given to patients (14, 15). Hence, the need for librarians' competencies to deliver research support services cannot be overemphasized. According to Pandey and Prasad, competence refers to the capacity to manage and operate the elements of one's surroundings or the tools professionals need to carry out their work (16). The American Library Association identified research competency as the understanding and proficiency in applying qualitative and quantitative research concepts, results, literature, and practical research assessment techniques (17).

Esmailzadeh et al. found that to provide research service and advice for the researchers, librarians at the Isfahan University of Medical Sciences needed to have general competencies (communication skills, professional ethics, and basic abilities), and specialized competencies (information resource retrieval and evaluation, using research software, research assistance, intellectual property literacy and scientific publication literacy (18). Istiana reported that providing support for researchers is an essential responsibility of the library; hence, librarians must

be able to provide knowledge, understanding, and skills in all research stages, assist in information retrieval, and use different strategies for different literature review types. In addition, they should be able to use data analysis and visualization tools, effectively handle reference management software, and other research tools (19). From the perspective of medical librarians, knowledge management skills, searching for scientific information for literature review, selecting standard keywords to search the databases, and providing health-care professionals with the latest scientific research findings are the most critical competencies for them to acquire (20).

As key players in the research environment, medical librarians should be able to guide researchers through research processes. However, there is limited evidence about medical librarians' competencies for providing research support to their academic communities, especially in Nigeria. Hence, the present study aims to survey the extent to which medical librarians can provide research support services to medical research in South-South, Nigeria. The objectives are to determine the research support services available in medical libraries; the perception of medical librarians about their competencies to support medical research; the importance of research support services in medical libraries; and the preferred mode of improving research support competencies.

Methods

The research adopted the survey research method to assess the extent of competencies medical librarians possess in South-South Nigeria to render research support services. The study covered the South-South region of Nigeria. Nigeria is a region that comprises six states: Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers. Located along the eastern coast of Nigeria, the region makes up 5% of Nigeria's land area, and it is crucial to Nigeria's economy, contributing significantly to crude oil production and natural gas extraction. The population of 47 medical librarians is drawn from 11 government-owned medicine and health sciences colleges from Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers State. The total enumeration sampling

technique is employed to cover all medical libraries. The respondents were solicited through the Medical Library Association of Nigeria mailing list. The study used a questionnaire as a data collection tool, partly self-designed after the researchers conducted an extensive literature review. Face validity was done to ensure that relevant items were added to the instrument. The introductory part of the instrument requested consent for respondents to participate in the study before they filled out each instrument. The questionnaire was divided into three sections. Section A of the instrument was self-structured and focused on demographic characteristics of medical librarians. Section B elicited information on the research support services available in medical libraries, and Section C was adapted from the Medical Library Association Competency Standards (21) and Khan and Parveen (22). Data was collected physically and electronically (through email) over 12 weeks. Physical data collection involved enlisting the help of three research assistants in Akwa Ibom, Cross River, and Rivers State to distribute the instruments. The instrument responses were based on agree and disagree, and a four-point Likert scale of High Competency (HC), Competency (C), Low Competency (LC), No Competency (NC), was used to score responses from 4 to 1, respectively. Thirty-three usable responses were returned, giving a response rate of 70.2%. Data was analyzed using Microsoft Excel 2019 spreadsheet package with descriptive tools such as simple percentage, frequency counts, and statistical mean. A criterion mean score of 2.50 was set as the cut-off point for the mean scores.

Results

Demographic Variables

Table 1 presents data on the demographic characteristics of respondents detailing the distribution by institution, gender, age, and highest educational qualification. Most respondents (18%) are from Delta State University, Abraka; the highest response is from the Delta State University Teaching Hospital (15%). Gender distribution indicates a predominance of females (64%) over males (36%). Age-wise, respondents are primarily



in the 31-40 and 51 and above categories, each representing 33.3% of the sample, suggesting a mature demographic. In terms of educational qualifications, most respondents hold a Master's degree or equivalent (48.4%), followed by Bachelor's

degrees (33.3%) and PhDs (18.3%). This educational profile highlights a well-educated sample, which may have implications for understanding their perspectives and experiences within the context of their respective institutions.

Table 1. Demographic characteristics

	Variable	Frequency	%
Institution	Niger Delta University, Wilberforce Island, Bayelsa State.	4	12
	Bayelsa Medical University, Yenegoa, Bayelsa State.	1	3
	Delta State University Abraka, Delta State.	6	18
	Delta State University Teaching Hospital, Oghara, Delta State	5	15
	University of Delta, Agbor, Delta State.	1	3
	University of Benin, Benin City	4	12
	Ambrose Alli University, Ekpoma, Edo State	2	6
	University of Benin Teaching Hospital, Benin City, Edo State	3	9
	Edo State University, Iyamo, Edo State	2	6
	Rivers State University, Rivers State	2	6
	University of Port-Harcourt, Rivers State	3	9
	Total		33
Gender	Male	12	36
	Female	21	64
	Total	33	100
Age	20-30	3	9.2
	31-40	11	33.3
	41-50	8	24.2
	51 and above	11	33.3
	Total	33	100
Highest educational qualification	BSc or Equivalent	11	33.3
	MSc or Equivalent	16	48.4
	PhD	6	18.3
	Total	33	100

The health research support services available in medical libraries

Table 2 highlights the available research support services in medical libraries in South-South Nigeria. Circulation and lending services (87%) are the most widely available services to support researchers. Current awareness services (51.5%) and reprographic services (48.4%) are also available to some extent. In contrast, online reference tools

("asks a librarian") and information resource selection services are available to a low extent, with only 27.2% and 30.3% of respondents, respectively. The analysis also shows significantly low (12%) availability for services like research methodology and data analysis, reference management, systematic reviews, and research output/publication services (9%), and scientific writing support is non-existent (0%).

Table 2. Available research support services in medical libraries

Items	Agree		Disagree	
	No.	%	No.	%
Circulation/lending services	29	87	4	13
Online reference services such as "ask a librarian"	9	27	24	73
Information resources selection service e.g. print materials, databases etc.	10	30.3	23	69.6
Internet services	12	36.3	21	63.6
Computer use services	14	42	19	58
Current awareness services (CAS)	17	51.5	16	48.5
Selective dissemination of information (SDI)	10	30.3	23	69.6
Inter-Library Loan (ILL) services	7	21	26	78
Online document delivery services	11	33.3	22	66.6
Indexing/Abstracting services	7	21	26	78
Literature search services	9	27	24	73
Training workshop on database	8	24	25	76
Research methodology and data analysis services	4	12	29	88
Reprographic services	16	48.4	17	51.6
Reference management services	4	12	29	88
Systematic review services	4	12	29	88
Research output and publication services	3	9	30	91
Scientific writing support	0	0	33	100
Repository management	2	6	31	94

Medical librarians' competencies

Table 3 presents the data on the competencies possessed by medical librarians in three aspects (Information services, research software use, scientific publication, and evidence-based practice competencies). An aggregate of the three aspects

reveals a mean score of 2.36. This implies that medical librarians in South-South Nigeria are not competent to provide research support services to support medical research. With a mean score of 2.53, medical librarians are mostly competent in providing information services. A mean score of



2.33 and 2.24 shows a low level of competencies in the aspects of research publication, evidence-based practice, and use of research software. While closer look at the results indicates that medical librarians are competent in the element of finding printed information resources, (2.90), assessing information needs using reference interview skills (2.87) and selecting information resources (2.81); however, they scored poorly in areas such as selecting appropriate information service delivery methods (2.03), using medical thesaurus and

subject headings (2.21), and finding unpublished studies for complex reviews (2.39). Additionally, competencies in refining search queries (mean = 2.48) and developing search strategies (2.45) are weak. The table also reveals medical librarians' limited skills in using reference management software like Mendeley, Zotero, or EndNote (2.09), as well as in handling plagiarism detection tools (2.09). Data analysis software, such as SPSS (2.18), and familiarity with citation styles (2.36) are also not strong.

Table 3. Medical librarians' competencies to provide research support

Competencies		HC	C	LC	NC	Mean
Information services competencies	Assess information needs of users using basic reference interview skills	12	9	8	4	2.87
	Select information resources by assessing its authority, accuracy, objectivity, currency, and relevance	8	13	10	2	2.81
	Effectively find printed information resources	9	17	2	5	2.90
	Effectively search and use databases and other online resources use databases	8	11	5	9	2.54
	Use medical thesaurus and subject headings	5	8	9	11	2.21
	Find unpublished studies for complex reviews	5	9	13	6	2.39
	Develop search strategies	6	11	8	8	2.45
	Refining search queries	5	11	12	5	2.48
	Carry out literature reviews	11	5	13	4	2.69
	Select appropriate information service delivery methods	7	2	9	15	2.03
Total mean			2.53			
Research software competency	Use reference management software/tools e.g. Mendeley, Zotero, Endnote	4	4	16	9	2.09
	Use data analysis software e.g., SPSS	8	3	9	13	2.18
	Familiarity with citation styles	7	6	12	8	2.36
	Familiarity with research ethics	9	5	12	7	2.48
	The ability to use plagiarism software	4	6	12	11	2.09
	Total mean			2.24		
	Ability to conducts research selects and implements appropriate research design	6	3	12	12	2.09
	Collects and analyzes research	5	7	11	10	2.21

Table 3. Medical librarians' competencies to provide research support

Competencies		HC	C	LC	NC	Mean
Research publication and evidence-based practice competency	Interprets data and presents statistical and data analyses.	3	5	17	8	1.84
	Uses advanced data visualization tools.	4	3	13	13	2.03
	Communicates research results. writes, edits, and revises manuscripts for publication.	4	3	10	16	1.84
	Choose appropriate journals for publishing papers	11	9	6	7	2.72
	Validation of journal impact	6	5	13	9	2.24
	The ability to submit a paper for publication	17	10	6	-	3.33
	The methods of increasing citation	12	5	10	6	2.69
	Total mean			2.33		
Aggregate mean				2.36		

Criterion mean: 2.50

High Competency (HC), Competency (C), Low Competency (LC), No Competency (NC)

The perception of medical librarians about the importance of competencies to provide research support

Table 4 reflects the perception of medical librarians about how critical the need is to be competent to provide research support in their libraries. A significant majority (73%) agree that competency to provide research support is "very important". Additionally, 15%

consider it "important," while 12% of the respondents are "uncertain" about the importance of research support competencies. The absence of responses in the "not very important" and "not important at all" categories affirm the general consensus about the relevance of these competencies. Overall, the table indicates that research support is perceived as a crucial aspect of the medical librarian's role.

Table 4. Importance of competencies to provide research support

Importance	Frequency	%
Very important	24	73
Important	5	15
Uncertain	4	12
Not very important	0	0
Not important at all	0	0



Discussion

The study surveyed medical librarians' competence in providing research support services to medical researchers in South-South, Nigeria. Biodata information shows that responses from 33 medical librarians from 11 medical libraries provided the basis for the results.

The results showed that circulation, lending, current awareness, and reprographic services are the most available research support services in medical libraries in South-South Nigeria. Online reference tools ("asks a librarian") and information resource selection services are limited. Some more vital services to medical researchers, such as the Internet, computer use, inter-library loan, online document delivery, indexing/abstracting services, and literature search services, are barely available in the medical libraries. In contrast, services like training workshops on database use, research methodology, data analysis services, and the like, are either scanty or non-existent. The implication is that a significant majority of libraries are engaging in these basic library research services, while other, more essential research services required for the work of contemporary medical researchers are not readily available. The inadequate and non-existent availability of these research services in medical libraries may make it difficult for researchers to visit and use them. This result disagrees with that presented by Han (9) and Chen and Zhou (10) that medical libraries provide services which provide support for research by actively partaking in user education, theme information services, institutional repository, dissertation preparation guide, information retrieval service, and manuscript proofreading services. Others are research planning, project, publication, and electronic preservation stages. The findings of this study corroborate the results of Popoola, Uzoagba, and Rabi, expressing that medical libraries do not provide specialized services to health care professionals (13).

Three competency areas (information services competency, research software competency, and research publication and evidence-based practice competency) were used to determine the competency level of medical librarians. The overall result shows

that medical librarians in South-South Nigeria are not competent to provide research support services to support medical research. Medical librarians possess the competency to deliver information services. They are competent in effectively finding printed information resources, assessing information needs, selecting information resources, and carrying out literature reviews. However, their competency levels to provide support in research software, use research publications, and evidence-based practice are low. Additionally, competencies in refining search queries, developing search strategies, using reference management software like Mendeley, Zotero, or EndNote, handling plagiarism detection tools, data analysis software, such as SPSS, and familiarity with citation styles are also not strong. This result implies that although medical librarians can provide basic research support, they are unable to undertake more modern tasks that most medical researchers may need. This suggests a limit to medical librarians' ability to support medical research effectively. This result does not support the assertions by Esmailzadeh et al.(18) and Istiana (19) that, librarians should have competencies such as knowledge, understanding, and skill in all research stages, information retrieval and strategies, various literature review types, and data analysis tools, the publishing process, data visualization tools, reference management software, intellectual property rights, publication impact, presentations, scientific publication literacy, scientometrics, and altmetrics competencies to offer these research support services. In the same vein, the findings differ from those of Marshall (23), who affirmed that many librarians are generally well-equipped to use reference management software such as Mendeley, Zotero, and EndNote, which they use to support research activities by teaching and assisting users with these tools. The author further stressed that librarians' expertise in information retrieval, resource management, and evidence-based searching is seen in the training sessions and consultations they render to researchers and students to enable them to efficiently manage citations and bibliographies.

According to the present survey, medical librarians believe that their ability to promote research is



crucial. This suggests that medical librarians are confident of their worth and contribution to medical research. According to Esmailzadeh et al. (18), librarians naturally recognize the importance of their competencies in supporting research, because of their traditionally trained skills that they believe are essential for meeting the evolving needs of academic communities. Many librarians believe they need specialized competencies to easily retrieve information from resources, research software use, data management, bibliometrics, and understanding intellectual property, which are increasingly necessary alongside traditional skills like communication and professional ethics (19, 24). However, the finding of this study confirms the results presented by Malik et al. (25) that librarians in Pakistan identified the gaps in their training, particularly in advanced research methods, data analysis, and scientific writing, and express a strong desire for ongoing professional development to address these needs.

Conclusion

The research services provided to support medical research in South-South, Nigeria are limited to basic library services such as circulation, lending services, current awareness services, and reprographic services, while data analysis, publication assistance, scientific writing support, and many more services, critical to advancing medical research, are few and non-existent. In addition, medical librarians are only competent to provide basic services and were found to have low competencies in many of the services vital to modern medical research. In addition, medical librarians perceived that their competency to provide research support is essential in medical research. Medical libraries and librarians contribute directly or indirectly to medical research. Evidently, professional competencies are required for medical librarians to continue supporting researchers engaged in medicine more than anything else. Based on the findings of this study, the researchers recommend that:

- Medical Library management should endeavour to expand its library service base. New and more relevant services explicitly designed to

address the needs of medical researchers should be established. For instance, Online reference, Internet, computer use, systematic review, research output and publication, scientific writing support, and repository management services can be instituted to improve the library's services that support medical research in Nigeria.

- Medical Library management should establish digital platforms within libraries where medical librarians can collaborate with researchers. These platforms could include tools for publication assistance, citation management, and collaborative research projects, further supporting researchers in the publication process and ensuring that medical librarians play an active role in scientific research support.

- Medical library management should endeavor to sponsor librarians to attend regular workshops, seminars, and certification programs to bridge the gap in critical areas like data analysis, publication assistance, and scientific writing support. This will improve their proficiency in using research software and enhance their capacity to effectively support advanced research processes.

- Medical librarians should make concise personal efforts to improve their competencies by attending self-sponsored trainings, free webinars, and professional association activities.

- Medical librarians should be trained to use new technologies, such as artificial intelligence (AI)-based tools, to select appropriate information delivery methods. This would enable more personalized and efficient information dissemination, improving research outcomes.

- To sustain competency in scientific publication, evidence-based practice, and other emerging areas, medical librarians should have a mandatory continuous professional development (CPD) program. Partnering with local and international bodies like the Medical Library Association (MLA) would ensure they stay current with global trends and best practices in research support.

Declaration

Acknowledgment

The authors wish to express their appreciation



to all medical librarians in South-South Nigeria who participated and responded to the study instrument.

Conflict of Interest

The authors declare no conflict of interest in conducting this research.

Ethical Statement

The authors confirm that this study adheres to all ethical principles of research and publication.

Funding and Support

No funding was received to carry out this study.

Authors' Contribution

Both authors participated fully in all aspects of the research.

Use of Artificial Intelligence

Generative AI tools were not used to generate content, conduct literature searches, or develop discussions.

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