

Integrating artificial intelligence competencies in Portuguese Academic Health Libraries: an exploratory study of librarians' perceptions

Luiza Baptista Melo (a) and Tatiana Sanches (a, b)

(a) Universidade de Évora, Centro Interdisciplinar de História, Culturas e Sociedades, Évora, Portugal

(b) Biblioteca Nacional de Portugal, Lisboa, Portugal

Abstract

Artificial intelligence (AI) is reshaping higher education and information services, creating opportunities and challenges for academic libraries, particularly in health sciences. Because evidence-based healthcare depends on trustworthy information, librarians need AI competencies that include ethical awareness and critical evaluation. This empirical study investigates Portuguese academic health librarians' perceptions of AI integration into professional practice. A survey based on the Association of College and Research Libraries' AI Competencies for Academic Library Workers framework (2025) explored ethics, knowledge, evaluation, and AI applications. Responses from librarians revealed limited institutional implementation, insufficient training opportunities, and the absence of formal evaluation frameworks. Nevertheless, participants recognized AI's potential while emphasizing professional judgement, ethical responsibility, and evidence-informed health information practices.

Key words: artificial intelligence; medical librarians; health information services; knowledge, attitudes, practice.

Introduction

Artificial intelligence (AI) has rapidly become a significant influence on higher education, transforming into how information is created, accessed, evaluated, and communicated. The emergence of generative AI tools has accelerated these changes, affecting teaching, learning, research, and scholarly communication. Academic libraries are increasingly confronted with the need to adapt services, support users in navigating AI-generated information, and develop professional competencies that enable critical engagement with these technologies. The growing interest in AI within Library and Information Science is reflected in a rapidly expanding body of research. Hasan, Saifullah and Hashmi (1) identify several potential benefits associated with AI applications in libraries, including improved information retrieval, automation of repetitive tasks, and enhanced user services. At the same time, concerns remain regarding transparency, bias, privacy, reliability, and accountability. A structured review by Raghavendra, Mallya and Payini (2) demonstrates the

growing prominence of generative AI within professional literature, while Ayinde, Ebiefung and Oladokun (3) conclude that academic libraries worldwide are exploring AI adoption despite persistent challenges related to governance, professional training, and institutional readiness.

Within higher education, librarians are increasingly expected to support students and faculty in understanding the possibilities and limitations of AI tools. Recognizing these developments, the Association of College and Research Libraries (ACRL) published the *AI Competencies for Academic Library Workers* framework in 2025 (4), proposing four interconnected domains of competence: ethical considerations, knowledge and understanding, analysis and evaluation, and use and application of AI. These developments hold particular significance for health sciences libraries. Health librarians work in environments where information quality, evidence appraisal, and methodological rigor are central professional concerns. Their responsibilities frequently include supporting evidence-based practices,

Address for correspondence: Luiza Baptista Melo, Universidade de Évora, Centro Interdisciplinar de História, Culturas e Sociedades, Palácio do Vimioso, Largo do Marquês de Marialva, n.º 8, 7000-809 Évora, Portugal. E-mail: lbmelo@uevora.pt

conducting advanced literature searches, delivering information literacy training, and assisting research activities. The integration of AI into health information environments therefore raises important questions regarding professional preparedness and institutional readiness. While international studies have explored librarians' perceptions of AI, evidence from Portuguese academic health libraries remains insufficient. This study tries to address this gap by examining how librarians working in health sciences higher education institutions perceive AI-related competencies and their integration into library services.

Health librarianship and artificial intelligence competencies

Health librarianship has long been characterized by a strong emphasis on professional competencies, reflecting the complexity of healthcare information environments and the importance of evidence-informed decision-making. Unlike many other academic settings, health sciences libraries support users whose information needs are directly linked to research quality, professional education, and clinical methods (5).

The development of evidence-based healthcare reinforced the role of librarians as information specialists capable of locating, evaluating, and synthesizing reliable information. According to Robinson *et al.* (6), health librarians require a combination of disciplinary expertise, pedagogical competencies, and technological skills. These abilities enable them to support diverse user communities, ranging from students and academics to healthcare professionals.

Health information specialists perform a broad range of professional activities, including research support, information retrieval, knowledge synthesis, scholarly communication, instruction, and data-related services. Recent studies indicate that many of these functions are being transformed by artificial intelligence, particularly those associated with evidence retrieval, systematic reviews, and research workflows. Rather than replacing professional expertise, AI is shifting the role of health information specialists towards the critical evaluation, validation, and responsible integration of AI-assisted outputs into research and clinical information services (7, 8).

Current debates surrounding AI in libraries therefore

extend beyond questions of technological implementation. Hasan *et al.* (1) argue that effective adoption depends upon balancing operational benefits with ethical safeguards and professional oversight. Similarly, Ayinde *et al.* (3) identify training, governance, and institutional strategy as key determinants of successful implementation. The growing prominence of generative AI within professional literature, documented by Raghavendra *et al.* (2), further highlights the need for librarians to develop skills that facilitate critical engagement with emerging technologies.

From this perspective, AI literacy should not be viewed as an entirely new professional domain. Instead, it can be understood as an extension of competencies already associated with health librarianship, particularly those related to critical evaluation, evidence appraisal, ethical decision-making, and user education. The ability to assess the reliability, provenance, limitations, and potential biases of AI-generated outputs aligns closely with the traditional responsibilities of health information professionals.

Methodology

An exploratory study was conducted among Portuguese academic libraries serving health sciences education and research. Data was collected through a structured survey developed from the ACRL AI Competencies framework (4).

The instrument included four questions addressing ethical considerations, knowledge and understanding, analysis and evaluation, and use and application of AI. A fifth open-ended question invited participants to share perceptions, concerns, and expectations regarding AI integration within their institutions.

The evaluation was distributed via Google Forms between March and April 2026. The target population comprised the eight health sciences libraries identified in the Higher Education Libraries Directory maintained by the Portuguese Association of Librarians, Archivists and Information Professionals (BAD). Five valid responses were obtained, corresponding to 62.5% of the target population.

All respondents were female. One participant was under forty years of age, one was between forty-one and fifty years old, and three were over sixty. Given the small and specialized sample, the study adopts a de-

scriptive and interpretative approach. Quantitative responses were analyzed through frequency counts, while qualitative responses were examined using thematic analysis.

Findings

Participants were asked to assess the development of AI implementation across the four ACRL competency domains using a four-point scale: 1 (not considered at all); 2 (little considered), 3 (specifically considered) and 4 (always considered), data are presented in Table 1. Given the small number of participating libraries (n = 5), these findings should be interpreted as descriptive indicators of current practice rather than as statistically generalizable results.

Ethical dimension

Ethical issues associated with AI appear to receive little institutional attention. Three respondents indicated that they were unaware of any discussions or practices addressing matters such as privacy, transparency, or algorithmic accountability. One participant reported that these issues are occasionally considered, while another indicated they are rarely addressed. The qualitative comments reinforce this perception, particularly regarding the need for foundational AI literacy before implementation. As one participant observed, "Before using AI tools, introductory training on artificial intelligence is necessary and crucial (...) including how AI works, natural language processing, and the ethics associated with AI". This comment suggests that ethical considerations

Competency domains	Level of Implementation (Absolute frequency of the responses)			
	Not considered	Little considered	Specifically considered	Always considered
Ethics (In your library, to what extent are the ethical implications of using artificial intelligence tools considered, particularly regarding user privacy and algorithm transparency?)	3	1	1	0
Knowledge (What is the level of knowledge that the professionals in your library have about the main concepts and types of artificial intelligence applicable to the academic context?)	1	0	4	0
Evaluation (What criteria are used in your library to evaluate AI tools applied to information retrieval, content curation, or research support?)	0	4	1	0
Use (How are artificial intelligence tools integrated into your library's daily practices - e.g., customer service, cataloging, user training?)	0	3	2	0

Table 1. Level of AI implementation.

Qualitative analysis

Analysis of the open-ended responses revealed two dominant themes. The first concerns the absence of institutional discussion. Several participants stated that AI has not yet become the subject of formal reflection, strategic planning, or organizational debate within their libraries. The second theme relates to the role of academic staff. Respondents observed that discussions concerning AI frequently originate from faculty members, particularly in relation to student assignments and research activities. In some cases, librarians participate in these conversations, although the initiatives appear to be driven primarily by teaching staff rather than library services.

are perceived as an essential component of AI education but have not yet been systematically incorporated into institutional practice.

Knowledge dimension

Participants generally reported limited familiarity with AI concepts. Four respondents stated that some professionals possess basic knowledge, although no structured training opportunities are available. One participant characterized institutional knowledge of AI as minimal. These responses suggest that professional learning remains largely informal and dependent upon individual initiative. This perception is reflected in comments such as "Although I use AI (very little) and pro-

mote it widely, I still feel very confused and insufficiently prepared" and "There should be more training in this area; we are somewhat drifting, waiting to see what happens".

Evaluation dimension

The evaluation of AI tools emerged as one of the least developed areas. Four respondents reported that no specific criteria are used to assess AI applications. Only one participant indicated that informal criteria are occasionally employed on a case-by-case basis. The absence of evaluation frameworks is noteworthy given the importance of source reliability and evidence quality within health information environments. One participant also highlighted that AI implementation should be assessed differently depending on the context, noting that *"the questionnaire should distinguish between the use of AI in user services (...) and in technical/internal services (...). They are not at the same level of use"*. This observation suggests that future evaluation frameworks should consider the diversity of library functions when assessing AI maturity.

Use dimension

Three respondents reported that AI tools are not currently used in daily library activities. The remaining two described occasional use without systematic integration into services such as user support, cataloguing, or information literacy instruction. These findings indicate that AI adoption remains largely experimental. One participant described current practice as *"more reactive than preventive"*, adding that *"it is an area that frightens us somewhat, and it evolves too quickly for us to keep up"*. Another respondent pointed out that discussions about AI are already taking place within teaching, noting that *"several lecturers include reflections on AI in their courses, highlighting both its strengths and weaknesses"*. Together, these comments suggest that while AI is increasingly visible within the academic environment, its integration into library practice remains limited.

Discussion

The findings portray a sector at an early stage of engagement with artificial intelligence. Across all four competency domains proposed by the ACRL framework, participants reported limited implementation, scarce professional development opportunities, and the

absence of formal policies or evaluation procedures. Rather than reflecting resistance to AI, participants' comments suggest that limited adoption is largely associated with the absence of structured institutional support, leaving professional learning dependent on individual initiative and experimentation. The qualitative comments reinforce this interpretation, revealing uncertainty about AI, a perceived lack of preparedness, and repeated calls for structured professional training before wider implementation. These findings are consistent with previous research indicating that the adoption of AI in academic libraries is still in an emerging stage, often characterized by exploratory implementation rather than systematic use (9).

These results align with broader international trends. Ayinde *et al.* (3) found that many academic libraries are exploring AI applications while struggling to establish governance structures, competency frameworks, and institutional strategies. Similar concerns are identified by Hasan *et al.* (1), who highlight ethical issues, professional preparedness, and trustworthiness as recurring challenges associated with AI adoption. Participants in the present study expressed similar concerns, emphasizing the need for foundational AI training, ethical awareness, and clearer institutional guidance before AI can be integrated confidently into professional practice. In general, these results point to the need for academic libraries to move towards systematic, criteria-based evaluation performances, ensuring that AI tools meet standards of reliability, academic integrity, and user trust (10).

The findings are also consistent with the observations of Raghavendra *et al.* (2). Although generative AI has become a prominent topic within Library and Information Science literature, practical implementation remains unfair and frequently experimental. The health sciences context introduces additional considerations. Health librarians operate in environments where information quality directly influences educational and research outcomes. Consequently, AI adoption cannot be approached exclusively as a technological innovation. The evaluation of AI-generated information requires abilities closely associated with evidence-based procedures, including source verification, critical evaluation, methodological awareness, and ethical judgment (11). In this respect, the competencies

traditionally associated with health librarianship remain highly relevant. Robinson *et al.* (6) emphasized the importance of combining professional expertise with pedagogical and technological competencies, while Park (7) highlighted the growing significance of research support, data management, and clinical information services in the research about the theme. AI does not diminish the importance of these competencies; rather, it reinforces their value in increasingly complex information environments.

A particularly interesting aspect of the findings concerns the apparent gap between institutional teaching practices and library initiatives (12). Participants reported that AI-related discussions are typically initiated by academic staff, reflecting the increasing integration of generative AI into teaching and assessment. In contrast, libraries appear to engage with AI only after these developments have gained momentum. Hayes (12) argues that academic librarians must understand how AI is adopted within different disciplinary contexts to provide meaningful support for teaching and learning. From this perspective, the present findings suggest that health sciences libraries remain at an early stage of this transition, with limited evidence of strategic engagement in institution-wide AI initiatives. This interpretation is further supported by participants' own reflections, with one respondent observing that library actions are currently "more reactive than preventive", reflecting a perception that institutional responses have not kept pace with the rapid evolution of AI.

This situation presents both a challenge and an opportunity. Academic health libraries possess expertise in information evaluation, digital literacy, and evidence-based approaches that could contribute significantly to institutional discussions regarding responsible AI use. Participants themselves repeatedly identified the need for structured professional development, suggesting that strengthening AI-related competencies may enable librarians to assume a more active role in institutional governance, user education, and research support.

Conclusion

This exploratory study examined perceptions of artificial intelligence competencies among librarians working in Portuguese academic health libraries. The

findings indicate that AI integration remains at an early stage, characterized by limited implementation, scarce structured professional development, and the absence of formal institutional frameworks for ethical governance and evaluation. Rather than reflecting resistance to AI, participants' responses suggest a strong awareness of its growing relevance, accompanied by concerns about insufficient preparation and the need for clearer institutional guidance.

The study also highlights a gap between the increasing presence of AI in teaching and research and its comparatively limited integration into library practice. While academic staff appear to be driving many AI-related initiatives, libraries continue to adopt a predominantly reactive role, despite possessing expertise in information evaluation, evidence-based practice, and digital literacy that could support institutional AI strategies more proactively.

As AI becomes increasingly embedded within higher education, health librarians are likely to face expanding responsibilities related to information assessment, research support, and AI literacy. Responding to these demands will require sustained investment in professional development, institutional policies, and collaborative initiatives that integrate AI within established principles of evidence-based librarianship, ethical practice, and responsible information management.

Although limited by the small number of participating libraries, this study offers one of the first empirical insights into AI competencies among Portuguese academic health librarians. It also provides a foundation for future research involving larger samples and comparative international studies, contributing to the broader discussion on the evolving role of health librarians in AI-mediated information environments.

Acknowledgements

This work is funded by national funds through the Foundation for Science and Technology under project UID/00057/2025.

Conflict of interest statement

The author declares no conflict of interest.

Received on 17 July 2026.

Accepted on 31 July 2026.

REFERENCES

1. Hasan N, Saifullah M, Hashmi AH. Application of artificial intelligence in libraries: Benefits and drawbacks. *J Data Sci Inform Citation Stud*. 2024;3(2):98-105.
2. Raghavendra G, Mallya J, Payini V. Generative artificial intelligence in library and information science literature: A structured systematic review. *Cogent Educ*. 2025;12(1):2591500.
3. Ayinde L, Ebiefung R, Oladokun BD. Adoption of artificial intelligence in academic libraries: A systematic review of current practices, challenges, and research opportunities. *J Acad Libr*. 2026;52(1):103185.
4. Association of College and Research Libraries. AI competencies for academic library workers. Chicago (IL): American Library Association; 2025.
5. Antunes ML, Lopes C, Borges MM. Colaboração de bibliotecários em equipas de investigação em saúde. *Rev EDICIC*. 2025;5(1):1-8.
6. Robinson L, Hilger-Ellis J, Osborne L, Rowlands J, Smith JM, Weist A et al. Healthcare librarians and learner support: A review of competences and methods. *Health Info Libr J*. 2005;22(Suppl 2):42-50.
7. Park, SG. AI and systematic reviews: Can AI tools replace librarians in the systematic search process? *Sci & Tech Lib*. 2025;1-22.
8. Chikware AB, Roman NV, Davids EL. Improving health informatics competencies: A scoping review of the components of health informatics academic programs. *Sage Op*. 2024,14.4: 21582440241293259.
9. Cox A, Wang X. Artificial intelligence in libraries: The emerging research agenda. *IFLA J*. 2025;51(3):567-569. doi:10.1177/03400352251365278.
10. Deja M, Kisilowska-Szurmińska M. Multi-criteria decision model for AI readiness in academic libraries. *J Libr Inf Sci*. 2026. doi:10.1177/09610006261430944.
11. Balnaves E, Bultrini L, Cox A, editors. *New horizons in artificial intelligence in libraries*. Berlin: De Gruyter Saur; 2025. doi:10.1515/9783111336435.
12. Hays, L. Disciplinary responses to generative AI: implications for academic librarians. *Library Trends*. 2025,73.4:516-37.