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Journal of Clinical Research and Reports

Mohammadreza Amiri *

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Research Article

# The Health Literacy Paradox: Navigating Competencies and Deficiencies Among Medical Librarians – A Multi-Center Qualitative Study

**Nafiseh Rezaei [1], Arezoo Farhadi [2], Hossein Vakilimofrad [1], Mohammadreza Amiri [1]*, Mohammadkarim Saberi [3]**

[1]Department of Medical Library and Information Sciences, School of ParaMedicine, Hamadan University of Medical Sciences, Hamadan, Iran.

[2]Department of Medical Library and Information Science, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran.

[3]Department of Nursing, Shirvan Faculty of Nursing, North Khorasan University of Medical Sciences, Bojnurd, Iran.

***Corresponding Author:** Mohammadreza Amiri, Department of Medical Library and Information Sciences, School of ParaMedicine, Hamadan University of Medical Sciences, Hamadan, Iran. Email: m.r.amirilib@gmail.com.

**Received date:** October 27, 2025; **Accepted date:** December 15, 2025; **Published date:** December 26, 2025

**Citation:** Nafiseh Rezaei, Arezoo Farhadi, Hossein Vakilimofrad, Mohammadreza Amiri, Mohammadkarim Saberi, (2025), The Health Literacy Paradox: Navigating Competencies and Deficiencies Among Medical Librarians – A Multi-Center Qualitative Study, *J Clinical Research and Reports*, 22(1); **DOI:**10.31579/2690-1919/595



## Abstract

**Background:** Medical librarians are pivotal in bridging health information gaps. However, their health literacy—a critical competency for effective practice—remains underexplored, creating a potential "empowerer needing empowerment" paradox.

**Methods:** Qualitative descriptive study with semi-structured focus group discussions. Twelve medical librarians were purposively sampled from amongst academic, hospital, and research libraries across three university networks. For the analysis of data, inductive thematic analysis was performed according to Elo and Kyngas' framework, with trustworthiness ensured through member checking, peer debriefing, and an audit trail.

**Results:** The analysis generated complex profiles, characterized by the dissonance between "Structural Access" and "Cognitive Application." Whereas participants showed proficiency in information access and critical appraisal skills, they reported considerable difficulties with comprehending complex medical jargon and transferring knowledge into personal health practices, thus creating a health literacy paradox for this professional audience.

**Conclusion:** Medical librarians exist at the intersection of information science and public health; however, their health literacy is not homogenous. The gap found between knowledge and action is a clarion call for institutional backing and educational interventions designed to strengthen their capacities as confident consumers and efficient disseminators of health information, thereby amplifying their contribution to public health outcomes.

**Key Words:** health literacy; librarians; medical libraries; information services

## Introduction

Skills for health literacy extend to the access, comprehension, appreciation, and application of health information and services to the benefit and maintenance of health for individuals, families, and communities[1]. It is a multifaceted idea ranging from cognitive and social skills to technical resources and practices that exceed literacy competence and formal education[2]. Studies conducted in recent times have indicated that low health literacy is likely to occur with poorer health outcomes, decreased adherence to medical regimens, lesser utilization of preventive services, and increased hospitalization rates, particularly in vulnerable populations[3, 4]. Thus, the World Health Organization (WHO) considers health literacy to be a fundamental modifiable health determinant and a persistent worldwide challenge, especially in responding to noncommunicable diseases and health inequities[1, 5].

In the digital age, information technology is vital for disseminating health information and influencing public health behavior via social media and digital health applications[6, 7]. The essential functions of the information professionals, including medical librarians, come in handy by acting as the linkages between health information and community needs. They deliver credible sources of information, empower users to peer through complicated databases, and improve health literacy among patrons in

clinical, academic, and public communities [8-10]. They must also possess high levels of health literacy and information competence as librarians to make accurate decisions, curate appropriate content, and ensure better satisfaction from users and the quality of care[9, 11].

But even with such obnoxious literature gaps, health literacy has been acknowledged as essential in public health, together with the advocacy role of medical librarians in bringing about health awareness. However, scholarly activity on librarians' participation in health literacy has increased significantly; there are still few studies examining the librarians' own health literacy levels, much less in qualitative investigations[9]. Understanding the competencies and challenges faced by librarians, as well as factors that influence their work, is vital to the development of targeted training programs.

Hence, this study adopts a qualitative study to assess the health literacy of medical professionals, the results of which are expected to contribute meaningfully to strategies meant to improve their competence in enhancing the efficacy of the utilization of community health information needs and public health systems.

## Materials and Methods:

Design and setting of the study

This qualitative study collected data through focus group discussions (FGDs), which explored the perceptions on and experiences of health literacy concerning medical librarians. The study was conducted in 10 libraries of the University of Medical Sciences and Health Services. Among the methods chosen was the FGD, which permits participants to interactively dialogue and captures a broad range of perspectives through participant interaction, making it very effective for exploring complex and multifaceted concepts such as age-appropriate health literacy.

### Participants and Sampling

Using purposive sampling, the selected participants for this study were expected to give rich and relevant insight based on their professional roles. The inclusion criteria stated that participants had to be practicing medical librarians with a minimum of ** five years' professional experience** in the field to be sure they had had enough exposure to health information contexts. Exclusion criteria included refusal to participate. Sampling continued until data saturation was reached, at which point no new themes emerged from subsequent

## Discussions

The study thus involved 12 medical librarians, resulting in the formation of 2 focus groups, each with six participants, for vibrant and manageable discussions. The general characteristics of the study participants, such as gender, age, and years of experience, are summarized in Table 1.

## Data Collection

Data collection was through semi-structured focus group discussions based on an interview protocol as created from models falling under established health literacy frameworks (such as Nutbeam's model) and an overview of related literature. The guide contained open-ended questions that were broad enough to cover four major areas:

1. Access to health information (e.g., "How do you seek and access reliable health information?")

2. Comprehension of health materials (e.g., "Can you describe your experience interpreting medical prescriptions or health brochures?")

3. Evaluation of health information (e.g., "What criteria do you use to assess the credibility of online health resources?")

4. Application of health information in decision-making (e.g., "How does health information influence your personal or professional health behaviors?")

Each focus group was moderated by an experienced qualitative researcher with an observer and a note-taker. The focus group discussion took place in a neutral meeting hall with a circular seating arrangement to promote interaction. Sessions were 50–70 minutes long, recorded with the audio recorders, and then verbatim transcribed for later analysis.

## Data Analysis

Analyzed using conventional qualitative content analysis as described by Elo and Kyngäs (2008). Such an analytical technique has an inherent flexibility for deriving themes directly from within the data without preconceived categories. Thus, this analytic approach also involved the following:

1. Familiarization: Repeated reading of transcripts for a holistic grasp of the data.

2. Open Coding: Identifying and labeling meaning-making units from participants' statements.

3. Grouping: Sorting codes into subcategories based on similarities and differences.

4. Abstraction: Development of main themes through integration and refining of subcategories.

To add to the trustworthiness of the analysis, multiple strategies were employed:

- Credibility: Peer debriefing with two independent qualitative researchers and member checking by sharing some early findings with participants for validation.

- Dependability: An audit trail of all analytical decisions is maintained.

- Confirmability: Regular team discussions were held to resolve discrepancies in coding and theme development.

- Transferability: Thick descriptions of the context, participants, and findings were provided for the readers to judge the applicability of results to other settings.

"To make the process transparent and trustworthy, qualitative content analyses were done in accordance with the systematic steps laid down by Elo & Kyngas (2008). It involved extracting meaning units, compiling them into codes, grouping similar codes under sub-themes, and finally abstracting main themes. To this effect, Table 2 would show this analytical process leading from raw data into final themes in a very transparent manner."

### Ethical Considerations

The research protocol was approved by the Ethics Committee of the University of Medical Sciences (Code: REC.1399.1063). The participants had signed a written informed consent form after an exhaustive explanation of the purpose and procedure of the study was given. Anonymity and confidentiality of the participants were guaranteed in all aspects during data processing and reporting.

## Results:

The research involved 12 medical librarians with varied demographic and professional backgrounds. There were eight females (66.7%) and four males (33.3%) aged between 25-35 years to 50-60 years. Generally, the majority were married (83.3%, n=10) while two were single (16.7%). In

terms of educational qualifications, the sample represented levels from bachelor's through to Ph.D. degrees: six participants held bachelor's degrees (50%), four had master's degrees (33.3%), and two had Ph.D. (16.7%). Professional experience varied considerably among the participants, ranging from 3 to 25 years (Mean=11.9 years), thus covering both early-career and highly experienced librarianship. The recruited participants spanned three different library settings: 5 emerged from academic libraries (41.7%), four from hospital libraries (33.3%), and three from research libraries (25%). The diversity of sampling methods enabled a more thorough representation of perspectives from different workplace settings and career levels within medical librarianship.

| Participant ID | Gender | Age Range | Marital Status | Education Level | Years of Experience | Library Type |
|---|---|---|---|---|---|---|
| **P01** | Female | 35–45 | Married | Bachelor's degree | 10 | Academic |
| **P02** | Male | 40–50 | Single | Bachelor's degree | 15 | Hospital |
| **P03** | Female | 30–40 | Single | Bachelor's degree | 7 | Academic |
| **P04** | Female | 45–55 | Married | Master's degree | 20 | Research |
| **P05** | Male | 25–35 | Married | Master's degree | 3 | Hospital |
| **P06** | Female | 35–45 | Married | Bachelor's degree | 12 | Academic |
| **P07** | Female | 40–50 | Married | Master's degree | 18 | Research |
| **P08** | Male | 30–40 | Married | Ph.D. | 5 | Hospital |
| **P09** | Female | 25–35 | Married | Bachelor's degree | 4 | Academic |
| **P10** | Female | 50–60 | Married | Bachelor's degree | 25 | Research |
| **P11** | Male | 35–45 | Married | Bachelor's degree | 8 | Hospital |
| **P12** | Female | 40–50 | Married | Master's degree | 15 | Academic |

**Table 2:** Demographic information of participants

| Participant Quotes | Initial Codes | Sub-themes | Main Themes |
|---|---|---|---|
| "Yes, because we work in the medical science group, we have access to the library and medical databases... Google search is available to everyone. Yes, I have access and I use it." | • Access to specialized resources<br>• Awareness of available sources<br>• Utilization of diverse platforms | Information Access Channels | Access to Health Information |
| "To some extent, I understand some of them, maybe 50%... I ask about most of them. Yes, I am careful about the side effects of medications. For example, I check the side effects of each pill or syrup." | • Partial comprehension<br>• Seeking clarification<br>• Medication safety awareness | Health Information Comprehension | Understanding Health Information |
| "First, I only accept information mentally when I am sure it is complete. The source website doesn't matter to me." | • Completeness as an evaluation criterion<br>• Source credibility assessment<br>• Critical appraisal of content | Information Critical Appraisal | Evaluation of Health Information |
| "Unfortunately, no. How often do we remain seated at the desk, constantly working with the computer? A doctor, Dr. Ramezani, previously advised us to take breaks every half hour, stretch, and perform simple exercises. Unfortunately, we do not follow this." | • Gap between knowledge and practice<br>• Workplace health negligence<br>• Recall of professional advice | Health Behavior Implementation | Application of Health Information |

**Table 2.** Illustration of Qualitative Data Analysis Process: Representative Quotes, Codes, and Themes

"The following themes were evinced from the analysis in respect of health literacy among medical librarians: (1) Health Information Access, (2) Understanding of Health Information, (3) Evaluation of Health Information, and (4) Usage of Health Information. Table 2 presents well-selected instances of how participant statements were coded and categorized during the analysis. They will also offer audit trail evidence."

## Discussion

The findings of this qualitative study illuminate the health literacy experiences of medical librarians, revealing strengths in accessing and evaluating health information, as well as notable challenges in comprehending and applying it effectively. These insights are particularly relevant given the pivotal role medical librarians play in bridging health information gaps for patients and health-care providers. The four emergent themes—Access to Health Information, Understanding Health Information, Evaluation of Health Information, and Application of Health Information—align with established health literacy frameworks, such as Nutbeam's model, which emphasizes functional, interactive, and critical dimensions of health literacy[12]. In any case, participant reports of partial understanding (for example, understanding only fifty percent of medical terms without further clarification) or the knowledge-behavior gap (such as ignoring health advice provided in the workplace) suggest an urgent need for targeted professional development in this group.

The environment of medical librarians nurtures their access to special resources such as medical databases and libraries; thus, their environment inherently favors functional health literacy. This correlates well with more current literature indicating how health information professionals utilize digital tools for information retrieval [2]. For instance, a 2020 cross-sectional study in a resource-constrained setting found that the healthcare professionals who had high eHealth literacy reported better access to reliable online health resources, similar to the librarians in our study who used Google alongside specialized databases[11]. However, the amalgamation of the participants' dependence on various channels leads to hypotheses on the inconsistency of source quality, which resonates with findings from a 2023 systematic review on eHealth literacy in health professionals by stating that although access is quite wide, disparities in digital competence may impair its optimal use.[13]. These findings indicate that although medical librarians have an advantage from institutional resources, a more coherent sense of this theme could have

emerged by training them on pathways in navigating digital health ecosystems.

To understand health information, this moderate interaction level of health literacy comprises a bit of comprehension on the part of the participants, along with a little bit of proactive seeking for clarification. This correlates with qualitative studies exploring interactive health literacy among health practitioners, who say barriers like complex medical vocabulary continue to be an obstacle despite their years of professional exposure. A 2020 qualitative study done in a community health center on health literacy perceptions demonstrated similar barriers, where professionals reported difficulty interpreting patient-facing material, which parallels our librarians' challenges with prescriptions and brochures[4]. Furthermore, the scoping review conducted in 2023 on health literacy education targeted to professionals underscored the importance of programs addressing this gap in comprehension and recommended interventions such as customized workshops toward increasing librarians' capabilities of not just understanding but also effectively translating health information for patrons[14].

The evaluation theme highlights critical health literacy skills, with participants emphasizing completeness and source credibility. This aligns with the changing role of librarians in combating disinformation, discussed in a 2021 examination of the eHealth and mHealth potential, where librarians serve as the primary evaluators of digital health resources[15]. Newer definitions of health literacy, particularly those in Healthy People 2030, emphasize the obligations of organizations in supporting such appraisal, indicating that libraries could institutionalize the training for credibility assessment as a means of developing this competency [16]. Our findings suggest a possible overemphasis on completeness of content rather than diversity of sources, which could potentially be resolved through integration with larger health literacy interventions, as demonstrated in a 2020 review of low- and middle-income countries' interventions that improved evaluation skills through structured education [4].

Health information proved to be the most glaring challenge for participants, who divulged varied degrees of what they verbalized versus what they did, such as ignoring ergonomic principles despite knowing them. This knowledge-behavior gap repeated in health literacy research among professionals, as pointed out in a longitudinal study of eHealth literacy implementation in 2022, which noted that low application could be attributed to such factors as work stress and insufficient system support[17]. The long-term conditions qualitative study in 2015 showed that social networks and mediators could bridge this gap, thereby implying that peer support or mentorship programs for librarians could help in better application on the personal and professional fronts[18]. The need for those interventions extends to behavioral integration beyond just cognitive skills and probably improves the public health contribution of librarians.

This research's qualitative strengths come through focus group data collection to capture interactive perspectives and through rigorous analysis with measures of the trustworthiness of member checking. Limitations are a small sample size and focus on one university system, restricting generalizability. Future studies might experiment with mixed methods to quantify health literacy levels among larger cohorts of medical librarians and/or assess the interventions to test their efficacy.

## Conclusion

To summarize, this qualitative research points out the multifaceted health literacy profile possessed by medical librarians. It talks about how they exhibit great strengths in accessing and critically appraising health information, but their proficiency tends to be moderated by challenges against deep comprehension and application of the knowledge internally. This duality is indicative of their unique role as both end-users and conveyers of health information. Significant implications are brought to light for structured educational initiatives and increased institutional support to facilitate development in these capacities. Addressing those identified gaps will help empower the librarians in championing health literacy more effectively within their communities and in achieving the wider public health goals intended in the national health initiatives. Ultimately, developing health literacy among librarians has a dual effect: it improves the health agency at an individual level and increases the capacity to improve public health results, reduce disparities, and create more health-literate societies. Future research should focus on designing and rigorously evaluating targeted interventions, including tailored digital health literacy training for information professionals.

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**DOI:**10.31579/2690-1919/595