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The role of librarians in healthcare interprofessional collaboration: a literature review

Mathew A. Farukuoye[1]

ABSTRACT

Background: As the delivery of healthcare evolves to become more interconnected, coordinating care between nurses, pharmacists, physicians, social workers as well as medical librarians and other disciplines has become increasingly important. Librarians are more deeply involved in ward rounds routine exercise, provision of instruction in health information literacy, medical informatic, evidence-based research skills, and problem-based learning. This article introduces key concepts relating to the interprofessional collaborative teamwork among health professionals and its impact on medical librarians.

Methods: Data for this paper was collected through the literature review and it was done using various online searching tools with relevant information including, PubMed, LibHub, Science Direct and Google Scholar.

Results: The results show that the emerging and changed roles have resulted in a shift in professional identity with the health sciences librarians moving toward a collaborative, consultative practice that is more closely aligned to user's needs and approaching patient care from a team-based perspective.

Conclusion and Recommendation: The paper concludes among others that there is a need for library science educators and health sciences librarians to seek and identify skills needed for evolving library practice and formal documentation of new roles within clinical settings. It is recommended that they should add technology, collaborative, consultative, instructional design, and teaching skills to their professional toolbox.

Keywords: Interprofessional collaboration, medical librarians, healthcare delivery, health information providers

[1]College Library, College of Health Sciences and Technology Ijero-Ekiti, Ekiti State, Nigeria
farukson2000@gmail.com

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Introduction

Today's patients have complex health challenges that require multiple discipline to resolve issues relating to their health status. As the needs of patients become more complex, delivery process involves various collaborations and patient handoffs among multiple healthcare professionals with different levels of educational and occupational background. Comprehensive patients are often required medical attentions that are beyond the scope of one professional expertise and practical training. In the course of a 4-day hospital stay, a patient may interact with over 50 different hospital employees, including physicians, nurses, technicians and others (O'Daniel & Rosenstein, 2008). Effective clinical practice relies on relevant and accurate clinical information and thus involves many instances where critical information must be accessible and accurately communicated.

Team work is essential in this regard because delivery of an effective healthcare involves collaboration among various healthcare professionals, each with different and unique skills, knowledge and perspectives. For example, a medical team having physicians, pharmacists and nurses as the core team members, might also involve occupational therapists, dieticians and medical librarians for timely and effective access to medical information which plays an important role in improving the quality of healthcare services.

In recent times, emphasis has been made on optimizing patient outcomes, quality of healthcare delivery and increasing teamwork and collaboration among healthcare professionals. This necessitates more than ever before the collaborative work among healthcare professionals to provide quality care to patients and their

families. However, there is a significant amount of research to show that patient outcomes, quality of care and cost of delivery are optimized when disciplines work together toward a shared goal that focuses on the patient.

The term Interprofessional collaboration is often cited in the healthcare literature and defined as partnership between a team of health professionals and a client in a participatory, collaborative and coordinated approach to shared decision-making around health and social issues. (Orchard et al., 2012). Interprofessional collaboration within healthcare is as an active and ongoing partnership between professionals from diverse backgrounds with distinctive professional cultures and possibly representing different organizations or sectors working together in providing services for the benefit of healthcare users (Morgan et al., 2015).

Interprofessional collaboration is often equated with healthcare teams (Reeves et al., 2010). Collaboration between physicians, nurses, and other healthcare professionals increases team members' awareness of each other's type of knowledge and skills, leading to continued improvement in decision making (O'Daniel & Rosenstein, 2008). According to the World Health Organization, by implementing interprofessional collaboration and learning to work together and respecting one another's perspectives in healthcare, multiple discipline can work more effectively as a team to help improve patient outcomes. However, one of the key features of hospitals as complex organizational environments is the highly professionalized and segmented nature of the workforce.

Demonstrating clear cause and effect relationships between collaborative team behaviour and particular outcomes is often difficult. Exceptional healthcare is facilitated by a collaborative approach including many different professionals and their clients (Braithwate & Westbrook, 2005; Robbins et al., 2012). Several studies have shown that collaboration leads to improved health outcomes and intermediary predictors of quality such as transfer of knowledge, sharing of information, and enhanced decision-making. However, the partnership between providers, patients and their families in shared decision-making, coordination, and cooperation has been defined as interprofessional collaborative practice (Orchard et al., 2012).

However, the impact of collaboration on patient safety has been studied in various contexts. Several authors have identified reductions in rates of medical error when interprofessional collaboration is strong and teams are trained to work safely, cooperatively, and in a coordinated way to avoid gaps in quality assurance measures (McKcon et al., 2006). The consensus among health care experts from a variety of professions and perspectives is that a collaboratively practicing workforce will be more responsive, efficient, and considerate of patient, family, and community roles, as well as providing improved care (Schmitt et al., 2011). Collaboration among health care teams may improve patient education and patient engagement in their care, including behavioural changes such as information seeking and effective delivery of information, patient involvement in decision-making, and patient participation in self-care.

Objective of the study

This study assessed the role of librarians in healthcare delivery and their impact in interprofessional collaboration.

Methods

Data for this paper was collected through the literature review and it was done using various online tools with relevant information including, PubMed (https://pubmed.ncbi.nlm.nih.gov), Google Scholar (https://www.scholar.google.com), ScienceDirect, and LISA (Library and Information Science Abstracts). Studies involving librarian-provided services for patients encountering the healthcare system, information providers, healthcare providers, or researchers were eligible for inclusion. All librarian-provided services in healthcare settings were considered as an intervention, including hospitals, primary healthcare settings, or public health clinics.

Findings and Discussion

The Roles of Medical Librarians in Clinical Settings

There has been an explosion of medical information in the past decade. Current clinical practice demands that clinicians be aware of current treatments and procedures, along with the latest practice standards and guidelines. The need to be able to rapidly retrieve relevant, accurate clinical information at the point of care is now felt more than ever. Physicians and other members of the medical team require access to the most accurate and up to date information in order to answer background questions. Background questions are questions which are asked to gain general knowledge about clinical issues. However, the rapid growth rate of literature and the emergence of new topics in medicine, juxtaposed against the busy schedules of physicians and medical team, complicated by the variety of information sources and lack of knowledge regarding various databases and search methods can create barriers to the availability of necessary information reaching the members of medical teams. As a way of solving this problem, libraries have created programs specific to the clinical setting such as clinical librarianship.

Clinical librarianship is defined as a process by which a medical librarian accompanies medical team during its visiting hours in hospital wards, as well as in daily and weekly meetings in order to directly and sometimes indirectly determine the information needs of the physicians and other medical team members. Haven known the information needs, the librarian conducts a search in relevant database and information sources, retrieves various documents and evidence and delivers the results to the medical team in a timely fashion. By participating on health care team, information professionals have expanded interprofessional collaboration in health care beyond the health professions. They may also teach clinical staff essential searching skills. This helps facilitate decision-making for physicians and clinical teams, saves time and finally improves the quality of clinical decision. (Yarahmadi et al., 2014). Librarians routinely work with a variety of health professionals in different settings, which creates the opportunity for them to play an important role in health care delivery and collaborative practice. The growth and changes in the area of informatics in health and medical centers and attempts at training medical librarians have expanded the role of librarians and information services in Clinical medicine and Evidence-based medicine. Evidence based medicine is the correct, accurate and knowledgeable use of the best and newest evidence for making clinical decisions for patients. According to Atlasi (2009), the process of EBM is divided into 5 stages:

- Creating clinical queries based on the patients' needs.
- Search information sources for the best possible evidences and documents
- Critical evaluation of evidences and selection of relevant and suitable documents.
- Using the retrieved evidence
- Evaluation of the results and storing them as the final results.

Clinical medical librarians (CMLs) play an important role in EBM which includes search and retrieval of relevant information followed by critical evaluation of search result and selection of most suitable and relevant documents. It is worth noting that the role of clinical medical librarian is far more critical in the third stage because the selection of evidence used by the medical team determines the path taken during treatment.

As partners to different health professionals, librarians have a role in interprofessional collaboration in both academic and clinical settings. In academic settings, librarians have focused their efforts on participating in interprofessional through evidence-based practice (EBP), problem-based learning instruction, non-curricular activities such as book clubs and provision of a physical space to meet for various disciplines. Studies have shown the collaborative work between medical librarians and healthcare professionals in research. Two studies describe how librarians established an interprofessional book club to encourage interprofessional communication, collaboration and respect between different health professions (Kilham and Griffiths, 2017; Haley et al., 2019). Between 2008 and 2017, it was found that 29% of

research articles and case studies published in the JMLA were co-authored by both librarian and healthcare professionals (Akers et al., 2018).

In some literatures, the CML has been recognized by resident and physicians as an expert in searching for clinical answers using electronic resources (Urquhart et al., 2007; Vaugh, 2009). Studies have shown that Medical Library have been collaborating with the Department of Medicine to implement a morning report program for over two decades (Detlefsen, 2011). This collaboration led to the hiring of a full-time CML, funded through and based in the Department of Medical Library Science in some University Hospitals. A major role of the CML was to help address the Department of Medicine's informational needs. Cimpl (1985) was prescient in anticipating the role of a CML 'to provide information quickly to physicians and other members of the healthcare team; to influence the information seeking behaviour of clinicians and to improve their library skills; and to establish the medical librarian's role as a valid member of the healthcare team.'

CMLs now typically serve as adjuncts to clinical teams, participating in morning reports, patient rounds, journal clubs, and department conferences. CMLs take direct requests for information or independently seek out articles and data based on what they perceive to be the needs of the clinicians. CMLs play a key educational role by informing and updating the team of the educational resources available (Winning & Beverley, 2003; Wagner & Byrd, 2004). Now, many academic medical libraries have begun integrating their services and staff into clinical settings through liaison programs. In these programs, librarians are assigned to specific departments, schools, and centers on the medical campus and offer outreach services such as literature searching, search alerts, one-on-one consultations, and group instruction on the use of library resources, and reference services (Oliver & Roderer, 2006).

Impact of Medical Librarian on Healthcare Delivery

Healthcare professionals today are under tremendous pressure from multiple sources. Added to the pressure in the workplace to increase clinical productivity, is the demand to be conversant with the current medical literature. The main impact of Clinical Medical Librarians services appears to be the perceived usefulness and quality of information resources provided by the CMLs. Going by historical background, in the mid-1970s the clinical medical librarian (CML) emerged to help clinicians quickly find information for the care of their patients (Colaianni, 1975). Physicians who worked with a CML recognized that the CML could help them find the information that they wanted, increase their knowledge of medical advances, and save them time (Greenberg et al., 1978).

In the 1990s, libraries became fully computerized. CML services grew as the need for computer skills increased and the relevance of evidence-based medicine (EBM) and evidence-based practice (EBP) became increasingly recognized (Lipscomb et al., 2000). However, over the last twenty years the profession of medical librarianship has undergone radical changes as collections have become increasingly electronic and librarians are more deeply involved in the provision of instruction in information literacy, medical informatics, evidence-based research skills, and problem-based learning (Crum, 2013). Librarians have often "left the building itself" to work within the programs and departments they support. Emerging and changed roles have resulted in a shift in professional identity with medical librarians moving toward a collaborative, consultative practice that is more closely aligned to user needs (Goetsch, 2008; Pritchard, 2010).

A second report published in 2007 measured the effects of the CML in providing information on a series of patients presented in a department of medicine's morning report (Banks et al., 2007). Immediately following the presentation of a newly admitted patient, a librarian, along with the department Chair or Chief resident, conducted a search of the medical literature to address questions regarding the care of the patient. The information was then provided to the house officers who were providing care. This study concluded that "presentation of a case at morning report, followed by the timely dissemination of the results of an

online literature review, resulted in a shortened length of stay and lower hospital charges compared with control" (Banks et al., 2007).

In a study sought to determine the effect of a Clinical medical librarian (CML) on outcomes of in-patients on the internal medicine service, it was highlighted that physicians have more queries for a clinical medical librarian (CML) when the patient has more complex medical problems. This implies that a clinical medical librarian can be most effective by rounding with those physicians who see the complex medical problems (Esparza et al. 2013). The research provides a detailed description of how a CML can function in a medical team and identifies team members most likely to ask questions that require a CML's searching abilities.

In another study carried out to assess the effects of librarian-provided services in healthcare settings on patient, healthcare provider, and researcher outcomes. Services provided to clinicians were shown to be effective in saving time for health professionals and providing relevant information for decision-making. Two studies indicated patient length of stay was reduced when clinicians requested literature searches related to a patient's case (Perrier et al. 2014). Weightman and Williamson (2005), in their review of the literature looking at the value and impact of library services on health outcomes, reported generally positive outcomes with respect to patient care, diagnosis, choice of tests, therapy, and length of stay. The most frequently cited reasons for using a CML were assistance with patient care, presentations, continuing education, publication, research, and retrieving information on a subject. The positive outcomes from these studies have led to increased integration of CMLs into clinical practice.

However, librarians' exposure to all of the health sciences disciplines provides them with a unique ventage point on the value of working with other health professionals and how to do so effectively.

Medical Librarians: New Roles, New Horizons

The need to be able to rapidly retrieve relevant, accurate clinical information at the point of care is now felt more than ever. However, it is estimated that more than two million scientific papers are published in biomedical journals every year (Lauritsen and Moller, 2006) and about 30,000 medical journals are published around the world (Timothy, 2021). Sifting through the multitude of articles to find relevant information is time consuming. However, for example, it has been estimated that to remain up to date in a medical specialty, a physician would need to read for 3h 19mins per day, 7 days per week (Pedersen and Moller, 2001). This is not practical for the average practicing physician as the emphasis on evidence-based medicine has highlighted the need to have the best available information at the point of care. It is especially critical to have timely access to accurate and up-to-date information for health care.

One measure for dealing with this "information crisis" is to transform traditional library services by bringing experts in information management into the clinical setting to assist the clinicians. Libraries has responded by creating programs specific to the clinical setting such as clinical medical librarian (CML). With this, librarians have uncoupled their identity from the library building itself and moved their services and expertise directly to the user, often in research and clinical setting less frequent in classroom (Kesselman et al., 2009). Clinical medical librarians now typically serve as adjuncts to clinical teams, participating in morning reports, patient rounds and department conferences.

As a result of this emerging development, many academic medical libraries have begun integrating their services and staff into clinical settings through liaison programs. In these programs, librarians are assigned to specific departments, schools and centers on the medical campus and offer outreach services such as literature searching, search alert, one-on-one consultations and group instruction on the use of library resources and reference services (Oliver and Roderer, 2006).

Health care and information technology are changing dramatically, and medical librarians and libraries must continue to adapt to keep up with the needs of patrons. This growth and changes in the area of informatics in health and medical centers and attempts at training medical librarians to act as clinical librarians have expanded the role of

librarians and information services in clinical medicine and evidence-based medicine. In order to properly fulfil the duties of providing information for medical team, clinical medical librarians should be ready to take up new role with regard to acquiring professional and medicine-related skills. The professional skills are skills related to medical librarianship which are necessary for a librarian before entering a clinical environment. These skills include knowledge regarding information sciences and databases related to medicine and healthcare (Shokraneh, 2010), proper information seeking and retrieval skills (Harrison and Beraquet, 2010), familiarity with information organization (Indexing and abstracting) and ability to evaluate the retrieved information and information integration and management.

Besides the professional skills, clinical medical librarians should possess medicine-related skills. These are skills necessary for medical librarians in order to work in clinical environment and to meet the information needs of medical teams. These skills include familiarity with evidence-based medicine and clinical question (Shokraneh, 2010), familiarity with terms and jargon used by medical teams (Lyon et al., 2015; Talachi et al., 2012), familiarity with different clinical services and specialisations, general medical knowledge (basic and applied), familiarity with medical rounds and clinical settings and ability to gain the trust of medical team.

In addition, clinical medical librarians should possess some general skills like playing a role of emerging technologies librarian, provision of consultative services, ability to provide embedded functions and good team player's qualities. In today's climate of change, it is not enough just to react and respond to those changes, medical librarians need to learn to spot trends, anticipate the needs of their patrons and proactively find new roles that will help the mission of their organization.

Conclusion

As an increasing number of hospitals are turning of medical librarians to help clinicians improve their information – seeking skills, librarians need to develop the interprofessional initiatives and seek out more collaborative ways to work together across interprofessional boundaries. While the individual situations in different sectors will always guide the development of libraries and library services to a certain extent, the ability to collaborate more effectively across interprofessional borders will enable clinical medical librarians to take advantage of the special skills and techniques of their colleagues to improve their ability to have a positive impact on library services in clinical setting, consequently on the improvement of global health. Health sciences librarianship is collaborative by its very nature.

The existing literature adequately outlines various collaborations in healthcare delivery process. However, more research is needed on the collaborative work among various disciplines working in clinical settings. Also, the existing literature lack concrete research on the new skills required of the librarians in healthcare delivery.

Recommendations

The following recommendations are proffered on the basis of the findings from the study:

1. Medical librarians and health information professionals should keep up to date with development in key areas such as information technology.
2. Librarians can create customized websites oriented specifically to the needs of the health care professionals.
3. Librarians can help to keep clinicians professionally updated by demonstrating the use of search strategies and setting up RSS (really simple syndication) feeds and email alerting services to easily obtain the most current literature on topics of interest.
4. Librarians can organize training programs and workshops on the use of reference management software for those clinicians involve in publication as this will save considerable time and effort.
5. Professional associations can provide a useful institutional infrastructure for addressing issues of interprofessional interest. Librarians should encourage their associations to develop these interprofessional initiatives and to seek

out more collaborative ways to work together across interprofessional boundaries.

6. For professional recognition, clinical medical librarians' roles in clinical setting should be well documented and proper awareness of its benefits to the health care communities should done.
7. Clinical medical librarians should also add embedded and emerging technologies, collaborative, consultative, instructional design, and teaching skills to their professional toolbox

References

Atlasi R. (2009). A review of the Clinical Medical Librarian's Role in the Evidence Based Medicine Process and Improvement of the Quality of Medical Services with an Approach to Hospital Libraries in the United States. National Studies on Librarianship and Information Organisation, 20(2): 299-312. [Persian]

Banks DE, Shi R, Timm DF, Christopher KA, Duggar DC, Comegys M, McLarty J. (2007). Decreased hospital length of stay associated with presentation of cases at morning report with librarian support. J Med Lib Assoc. 2007 Oct;95(4):381–7. DOI: http://dx.doi.org/10.3163/1536-5050.95.4.381.

Braithwaite, J., & Westbrook, M. (2005). Rethinking clinical organizational structure: an attitude survey of doctors, nurses and allied health staff in clinical directorates. J Health Serv Res Policy 10(1), 10-17.

Cimpl, K. (1985). Clinical medical librarianship: a review of the literature. Bull Med Libr Assoc 1985; 73:21-28.

Colaianni LA. (1975). Clinical medical librarians in a private teaching-hospital setting. Bull Med Lib Assoc. 1975 Oct;63(4):410–1.

Crum, Janet A., and I. Diane Cooper. (2013). "Emerging Roles for Biomedical Librarians: A Survey of Current Practice, Challenges, and Changes." Journal of the Medical Library Association 101, no. 4 (October 2013): 278-286. https://doi.org/10.3163/1536-5050.101.4.009.

Detlefsen, Ellen G. (2011). "What are New Graduates Learning about the Core Knowledge of the Information Professions?" MLA News 51, no. 2 (February 2011): 1. 22.

Esparza J M, Shi R, McLarty J, Comegys M. Banks D E. (2013). The effect of a clinical medical librarian on in-patient care outcomes. J. Med Lib Assoc. 2013 Jul; 10 1(3): 185-91 https://doi.org/10.3163/1536-5050:101.3.007.

Goetsch, Lori A. "Reinventing our Work: New and Emerging Roles for Academic Librarians." Journal of Library Administration 48, no. 2 (2008): 157-172. 273.

Greenberg B, Battison S, Kolisch M, Leredu M. (1978). Evaluation of a clinical medical librarian program at the Yale Medical Library. Bull Med Lib Assoc; 66(3):319–26.

Haley J. McCall R.C, Zomorodi M. de Saxe Zerdan L. Moreton B. Richardson L. 2019. Interprofessional collaboration between health sciences librarians and health professions faculty to implement a book club discussion for incoming students. J Med Libr Assoc. July; 107(3): 403-10. https://doi/org/10.5195/jmla.2019.563.

Harrison J. and Beraquet V. (2010). Clinical librarians, a new tribe in the UK: role and responsibilities. Health Info Libr J. 27(2): 123-132.

Institute of Medicine. (2010). The future of nursing leading change, advancing health. Washington, DC: National Academy Press.

Joint Commission on Accreditation of Healthcare Organizations. (2005). National patient safety goals. http://www.jointcommission.org/PatientSafety/nationalPatientSafetyGoals/

Akers, K.G., Higgins, M & Tan, C.Y. et al. (2018). Collaboration between health sciences librarians and faculty as reflected by articles published in the Journal of the Medical Library Association J Med Libr Assoc. 106(4):416-419

Kesselman, Martin A., and Sarah Barbara Watstein. (2009). "Creating Opportunities: Embedded Librarians." Journal of Library Administration 49, no. 4: 383-400.10.

Kilham J. P., Griffiths S.P. 2017. It takes an academic village: the library's role in supporting interprofessional communication through a book club. Med Ref Serv Q. Jan-Mar; 36(1): 42-8. https://doi.org/10.1080/02769.2017.1259903

Lauritsen, J. & Moller, A.M. (2006). Clinical relevance in anesthesia journals. Curr Opin Anaesthesiol; 19: 166-170.

Lipscomb C.E. (2000). Clinical librarianship [historical notes] Bull Med Lib Assoc. 2000 Oct;88(4):393–5.

Lyon J. A. Kuntz G. M. Edwards M. E. Butson L. C. Auten B. (2015). The lived Expirence and Training Needs of Librarians Serving at the Clinical Point-of-Care. Med Refe Serv Q; 34(3):311-333.

Mckoon, L. M., Oswaks, J. D., & Cunningham, P. D. (2006). Safe-guarding patients: complexity science, high reliability organisations, and implications for team training in healthcare. Clin Nurse Spec 20(6), 298-304, quiz 305-6.

O'Daniel, M., & Rosenstein, A. (2008). Professional communication and team collaboration. Retrieved from http://www.ncbi.nlm.nih.gov/books/MBK2637

Oliver K.B. & Roderer N. K. (2006). Working towards the informationist. Health infomatics J; 12:41-48.

Orchard, C.A., King, G.A., Khalili, H., & Bezzina, M. B. (2012). Assessment of Interprofessional Collaboration (AITCS): Development and testing of the instrument. Journal of Continuing Education in the Health Professions, 32(1), 58-67. https://doi.org/10.1002/chp.21123

Pedersen, T. & Moller, AM. (2001). How to use evidence-based medicine in anaethesiology, Acta aneesthosiol Scand; 45;267-274

Perrier L, Farrell A, Ayala A P, Lightfoot D, Kenny T, Aaronson E, Allee N, Brigham T, Connor E, Constantinescu T, Muellenbach J, Epstein H A, Weiss A. (12014). Effects of librarian-provided services in health care settings: a systematic review. J AM Med Inform Assoc. Nov-Dec; 21(6): 1118-24. https://doi.org/10.1136/amiajnl-2014-002825.

Pritchard, Peggy. A. (2010). "The Embedded Science Librarian: Partner in Curriculum Design and Delivery." Journal of Library Administration 50, no. 4: 373-396

Robbins, J., Garman., Song. P., & McAleamey. A. S. (2012). How high-performance work systems drive health care value: an examination of leading process improvement strategies. Qual Manag Health Care 21(3), 183-202

Shokraneh F. (2010). The Clinical Librarian's Answering Steps to Emergency Medicine Faculties' and Residents' Clinical Questions in 7th Tir Martyrs Hospital Tehran, Iran. M.Sc. thesis, Faculty of management and medical information, Iran university of medical sciences.

Talachi H. Ravaghi H. Ayatollahi H., Atlasi R, (2012). The Scientific and Practical Features of Clinical Librarians with an Emphasis on their Role in the Process of Evidence-based Medicine: A Literature Review. Journal of Health Administration: 15(47): 7-12 [Persian]

Timothy, Gower (2021). What are Medical Journals? WebMD, LLC. https://www.webmd.com/a-to-z-guides/medical-journals

Urquhart C, Turner J, Durbin J, Ryan J. (2007). Changes in information behavior in clinical teams after introduction of a clinical librarian service. J Med Lib Assoc. Jan;95(1):14–22.

Vaughn, C. J. (2009). Evaluation of a new clinical librarian service. Med Ref Serv Q. (2009) Summer;28(2):143–53. http://dx.doi.org/10.1080/02763860902816750.

Wagner K. C. & Byrd G. D. (2004). Evaluating the effectiveness of clinical medical librarian programs: a systematic review of the literature. J. Med Libr Assoc; 92:14-33.

Weightman, A.L. & Williamson, J. (2005). Library & Knowledge Development Network (LKDN) Quality and Statistics Group. The value and impact of information provided through library services for patient care: a systematic review. Health Info Libr J ; 22: 4-25

Winning M.A. & Beverley C.A. (2003). Clinical librarianship: a systematic review of the literature. Health Info Libr J; 20 Suppl 1:10-21.

Yarahmadi A. Zare-Farashbandi F. Kachuei A. Nouri R. Hassanzadeh A. (2014). The Effects of Non-Attendance Information Therapy on the Control of Glycosylated Hemoglobin (HbA 1 C) in Type 2 Diabetic Patients. J Edu Health Promot; 3(1):90 [Perssian]