Examine the Effectiveness of AI Chatbots Responses on Health Library Reference Services

Hajra Kalsoom
hajranaveed9@gmail.com
M.Phil Scholar, Department of Library & Information Science, Alhamd Islamic University Islamabad

Sajeed Gul
sajeedgul4@gmail.com
Librarian Govt College of Management Sciences, Khyber Pakhtunkhwa

Naheed Akhter
naheedakhter890890@gmail.com
M.Phil Scholar, Department of Library and Information Science, Alhumd Islamic University Islamabad

Mamoona Akhtar
maimoonakhtar786@gmail.com
MPhil Scholar, Department of Library and Information Science, Alhamd Islamic University Islamabad

Dr. Ata ur Rehman
ata.rahman@iiu.edu.pk
Assistant Professor / HOD Department of LIS, Alhamd Islamic University, Islamabad

Dr. Asma Zafar
asmaali2003@gmail.com
Professor of Sociology Higher Education Department Punjab
Corresponding Author: * Hajra Kalsoom hajranaveed9@gmail.com

ABSTRACT

The purpose of this study is to investigate the potential for AI chatbots to supplement health library reference services. The research seeks to provide valuable insights into AI chatbots' effectiveness, limitations, and best practices in healthcare libraries by analyzing how they respond to medical student reference queries. An extensive literature review was conducted to inform the design of an investigation into how AI chatbots respond to medical students' reference queries. Several key terms, including "artificial intelligence chatbots," "artificial intelligence technologies," "AI reference services," and "library reference services," were used to search scholarly databases. Research sources were screened for their functionalities, limitations, and best practices for AI chatbots in healthcare libraries. Artificial intelligence chatbots may even perform reference services, relieving librarians of their workload. AI chatbots can revolutionize healthcare education, reference services, and research. Health librarian and medical student training programs are necessary to ensure successful integration. Several factors hinder the integration of AI into library operations, such as insufficient funding, librarian disinterest, and technical skills shortages. Librarians should be prepared to integrate AI into library reference services and address concerns regarding information misuse in the future. AI has the ability to enhance library reference services, improve efficiency, and provide access to information. There are many benefits to implementing AI chatbots for health library reference services, including improved efficiency, 24/7 access to health information. The study outlines the importance of health libraries to the use of AI by medical students, as well as the role of AI-Chatbots can play in facilitating reference queries in this field.

INTRODUCTION

A branch of computer science commonly referred to as Artificial Intelligence (AI) is one of the most emerging and trending technologies in the world and is discussed in different types of media such as newspapers, television, and the internet. The artificial intelligence (AI) revolutionized various fields such as education, medicine, law, military, and so on as a result of technological developments (Wood and Evans, 2018). In a similar vein, it involves developing machines that can run computer programs and carry out tasks requiring human intelligence. But now, it has become a part of our daily lives. While ChatGPT is the most popular application of AI-Chatbot. ChatGPT stands for (Chat Generative Pre-training Transfer) which is developed and owned by the Open AI Company that is dedicated to AI research. Chatbots are designed to generate text, generate content, answer questions write song lyrics, and debug code for software developers (Ray, 2023).

Library services play a critical role in facilitating access to health information for individuals seeking it. Librarians have traditionally assisted patrons by navigating resources and answering reference questions. It has become necessary to explore innovative solutions due to the ever-increasing volume of health information and limited library staff resources. Recent evidence suggests AI chatbots can enhance library services, including reference support, through artificial intelligence AI technologies (Gujral et al., 2019). These chatbots can answer basic questions, provide 24/7 support, and direct users to helpful resources using natural language processing (NLP) (Adebayo et al., 2023). AI chatbots have sparked interest specifically in health library reference services because of their potential to improve accessibility and efficiency.

Health libraries need to be more aware of the implications of AI and plan strategically to take advantage of its potential. They should also strive to create partnerships with AI experts in order to stay ahead of the curve (Verma and Gupta, 2022). Although AI developers, the academic community, and publishers require the collective efforts; the content of AI must be realized whereas minimizing the risks associated with its misuse (Jeyaraman et al., 2023).

Research Objectives

This study examines how effectively AI-Chabots respond to reference inquiries. This study aims to accomplish these goals by analyzing published literature to;

1. To know about the effectiveness of AI chatbots responses to medical students' reference queries.
2. To explore the functions, and best practices of AI chatbots in healthcare libraries and information services.
3. To explore the limitations of AI chatbots in healthcare libraries and information services.
4. To provide the valuable recommendations based on the findings of the study.

Research Questions

1. How AI chatbots can respond to medical students' reference queries?
2. What are the functions, and best practices of AI chatbots in healthcare libraries and information services?
3. What are the limitations of AI chatbots in healthcare libraries and information services?

LITERATURE REVIEW

AI technology is indulging in every field of life similarly; it is performing a great role in developing and enhancing library services. Artificial Intelligence and libraries have a profound and great nexus. The use of artificial intelligence technologies has improved some basic library services, including acquisitions, cataloging, classification, and information retrieval (Wu et al., 2019).

Service Oriented Use of AI-Technology

There are a variety of applications based on artificial intelligence, such as expert systems, natural language processing, pattern recognition, and robotics. It was found where these AI applications can perform vital role in the field of business industrial sectors, Military sectors and scientific sectors similarly, the same can be more beneficial towards library and information science and libraries. It will be extremely useful in the areas of cataloguing, classification, documentation, and collection development in libraries (Mogali, 2014). The Humanoid robots which are almost used in every aspect of life including public libraries. Robots such as these are capable of performing tasks in libraries that humans cannot do efficiently. Humanoid robots with artificial intelligence are very useful for public libraries' reference services. (Tella and Ajani, 2022).

AI Chatboots Integration into Library Services

Google Translate, voice search, Google Assistant, and pattern recognition are among the AI tools used in libraries, such as Natural Language Processing (NLP). Similar to cloud computing, OneDrive, and Google Drive, big data can also be accessed via these services (Ali et al., 2020). Besides providing services using AI technology, libraries also support researchers in using AI in their research (Musib et al., 2017). Despite the fact that a great deal of research has been going on regarding AI in libraries for the past few years, many scholars believe that AI could change the way libraries operate in a rational way (Wood and Evans, 2018).

AI technology will improve library services by providing accurate information and reference services at lower cost. Users will interact on the same platform and gain access to accurate information. Similarly, in developing countries, the majority of librarians and information officers are not still aware of the use of AI in their libraries and as AI technology is growing at a rapid speed, librarians in developing and developed countries are not yet wholly attentive to this (Ali et al., 2020). ChatGPT can assist readers in technical services like, answering basic questions, Assisting with the development of the library's collection, catalogue, and classification, as well as navigating the library's websites. On the other hand, due to the risk of inexact query responses and misuse, it should be an opposite technology rather than a replacement for human librarians (Adetayo, 2023).

AI Based Health Library Reference Services

It has been observed through reviewing different research that some libraries utilize AI to some degree. Librarians can answer patrons' questions through virtual reference chatbots (Asim et al., 2023). Artificial intelligence performs a vital role in health libraries. AI-Chatbot is considered to have enormous potential in helping experts and medical students with clinical and laboratory diagnoses in planning and executing medical research (Garg and Rao K, 2024).

AI-Chatbot is an essential tool of AI Technology and can be very beneficial for health and medical libraries and has a great influence on health libraries because through this tool students ask different questions and prepare their assignments and also improve student learning but on the other hand due to its misuse it has some, potentially harmful effects, like ethical issues. , lack of creative thinking, copyright issues, etc, (Leung et al., 2023). However, there are great opportunities for health libraries to implement AI-Chatbot in their libraries because it has a significant impact on integrating generative AI into teaching, learning, and

assessment in medical schools, as well as improving the quality of teaching and learning using it (Boscardin et al., 2024). It remains to be determined whether AI chatbots are effective in providing accurate and reliable health information. Although some studies suggest that chatbots can be used to handle basic reference inquiries and direct users to reliable sources.

Librarian Capabilities in Provision of AI Based Library Services

The stories about intelligent machines in the past were limited to stories in books and films, but today, Artificial Intelligence is being applied across all fields of science and technology, including libraries. A librarian should gradually adopt AI applications because their need will be felt in the near future, according to this research (Yoganingrum et al., 2022).

There is a rapid increase in the implementation of AI technology. It can improve dynamic library services for patrons. A lot of library activities can benefit from artificial intelligence, especially searching for information (Yusuf et al., 2022). Artificial Intelligent and ChatGPT have a great influence on health libraries. A majority of librarians agreed that they would use ChatGPT to diagnose themselves and for health-related purposes (Shahsavar and Choudhury, 2023).

AI-Chatbot Responses to Medical Students Reference Queries

AI helps medical students to learn more about research articles and improve their knowledge through quizzes. The use of AI technology in health libraries plays a crucial role in conducting health-related research (Eysenbach, 2023). Medical students can practice and improve their understanding of various health-related concepts using AI technology. Additionally, AI can help students comprehend key findings and stay up to date with the latest advances in the field by summarizing complex research articles (Charow et al., 2021). User satisfaction levels in libraries of higher education institutions in Nigeria increased significantly after AI tools were implemented. An overall positive experience with AI-powered library services was reported by users, including convenience, efficiency, and access to resources (Okpokwasili Nonyelum, 2019).

Challenges Associated with AI Based Library Services

The lack of knowledge and absence of discussion is the great dearth of librarians regarding Artificial Intelligence and its applications which are used in libraries (Dwivedi et al., 2021). Different organizations are implementing artificial intelligence (AI) at an alarming rate. The technology of artificial intelligence is still largely unknown to librarians in developing and developed countries. There is no doubt that Al is one of the emerging applications that can help libraries provide better services. However, the researchers recommend some key points to be kept in mind to adopt the Artificial Intelligence applications in libraries like, adequate funds, trainings and conferences (Hussain, 2023). Although Chatbots have the potential to enhance student learning and engagement, they also present several difficulties and restrictions, including moral dilemmas, unintended consequences, and considerations for curriculum development, evaluation techniques, and instructional methodologies (Lee, 2024). Shah, N U (2013) conducted an in-depth study to prove the core connection between better library service qualities translates directly into higher user satisfaction, whether the service is accessed online or on-site. The goal? To ensure that these services act as powerful catalysts, unlocking the full potential and utility of every resource the library offers.

There are some limitations to AI technology's full deployment, including insufficient funds, insufficient staff and professional training, inadequate planning, and insufficient interest from librarians. AI in library operations is hampered by a lack of adequate funding, lack of librarian interest, and technical skills (Jha, 2023).

The researchers further explains that if the AI is not executed gradually then, it will adversely affect the number of librarians needed in the workforce over the next ten years. Developing curriculum adjustments should be the first topic of discussion for librarian school deans. (Wood and Evans, 2018). In certain LIS courses offered at Austrian universities, only one subject AI is assigned to position subject contents. According to this, AI-related subjects can be incorporated into LIS curriculum in ways that will benefit future librarians (Tait and Pierson, 2022). Adebayo et al., (2023) raise concerns about their ability to handle complex questions and their potential to spread misinformation. Students will also be incapable to come up with novel ideas or provide sound justifications for their points of view. Similar to copyright violations, lack of original thoughts, methodological biases, and inaccurate data, it faces additional difficulties as well (Arif et al., 2023).

METHODOLOGY

A comprehensive exploration of academic databases and other relevant sources was carried out using keywords and phrases related to the research topic. The search was confined to scholarly articles, books, and reports. The collected literature was scrutinized to identify materials closely linked to the research topic. An extensive literature analysis was conducted to define, extract and analyze the potential and challenges of using AI chatbots in health libraries and the approaches utilized to implement them. The findings were then discussed in the discussion section to examine the associations between the AI chatbots and library reference services and the strategies implemented to offer them. A discussion of the findings was then reported to explore how AI can improve the health libraries reference services and how much effective the responses of AI-chatbots on reference quires of medical students.

DISCUSSION

This study examines the potential and challenges of using AI chatbots in health libraries. This review explores how AI technologies can revolutionize library services and how AI can improve elementary library operations like acquisition, cataloguing, and information retrieval through the use of AI technologies.

The use of AI-chatbots in library services can save library staff time by addressing common questions from users. This approach allows library users to access library resources anytime, anywhere, regardless of when the library is open (Garg and Rao K, 2024). Expert systems, natural language processing, and robotics are some of the applications and tools powered by artificial intelligence. The impact of AI on various library functions has been highlighted in a number of reviewed studies. The use of AI chatbots in library services, such as cataloguing, classification, and collection development, has been demonstrated by (Okunlaya et al., 2022; Wu and Wu, 2019). Humanoid robots are also capable of performing reference services, potentially alleviating librarians' workloads (Tella and Ajani, 2022). AI chatbots can significantly improve user experiences. As a result of these chatbots, libraries can provide 24/7 access to information and personalized recommendations, fostering a more user-friendly experience (Ali et al., 2020).

AI chatbots also assists the students and medical professionals with clinical diagnosis, research planning, and education. The potential benefits of AI chatbots in terms of learning, assessment, and admissions processes (Eysenbach, 2023). However, this study recognizes the challenges and opportunities associated with AI-based services integration in libraries. A study conducted by Adetayo (2023) raised the issue of the potential for inaccurate responses and misuse of AI chatbots (Adetayo, 2023). The use of artificial intelligence should be considered as a complementary technology and not a substitute for human librarianship. Another crucial aspect of AI in library services that needs to be explored is creating awareness among LIS professionals in developing countries (Harisanty et al., 2022).

CONCLUSION

The use of AI chatbots in library reference services may enhance library services. It also improves the efficiency of health libraries and provides 24/7 access to information. AI chatbots are able to modernize the health education, health reference services, and research. However, successful implementation requires addressing accuracy concerns, ethical considerations, and librarian preparedness. Medical students and librarians must be trained in AI chatbot integration to ensure that AI chatbots are successfully integrated into health libraries and reference services. There are certain challenges that need to be addressed before AI technology can be fully integrated into libraries. These include issues such as inadequate funding, lack of staff and professional training, poor planning, and insufficient interest from librarians. The integration of AI into library operations is hindered by several factors, such as insufficient funding, lack of interest from librarians, and lack of technical skills. Future research should focus on addressing concerns regarding information misuse, and safeguarding librarian readiness for AI integration into library reference services.

RECOMMENDATIONS

- Library professionals should be develop their skills and expertise in the future robotics era.
- AI-related subjects should be incorporated into LIS curriculum in ways that will benefit future librarians.
- A proper policy for AI-centric services should be devised and the attitude of librarians should be improved

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