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AI is Fueling the Future of Pharmacy

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***Abstract* - Artificial intelligence (AI) has the potential to revolutionize and transform the field of pharmacy by improving efficiency, accuracy, and patient outcomes. In this systematic literature review, the researcher aims to assess latent research on the use of AI in pharmacy, identify key trends and challenges, highlight potential areas for future research, and evaluate the evidence on AI in fueling the future of pharmacy. A total of 15 studies were incorporated into the evaluation, and the results suggest that AI can improve pharmacy practice by increasing efficiency, accuracy, and patient safety. However, using AI in pharmacy also raises concerns about potential biases, ethical implications, and the need for adequate training and supervision.**

Keywords: Artificial intelligence (AI), pharmacy, healthcare, patient safety, patient data, patient care, and ethics.

I. INTRODUCTION

Pharmacy is a critical component of the healthcare system, responsible for the safe and effective use of medications [1][2]. However, pharmacy faces increasing challenges, including a growing demand for services, limited resources, and the need to stay up-to-date with constantly changing medical knowledge [3]. AI has the potential to address these challenges by automating routine tasks, analyzing large amounts of data, and providing decision support to pharmacists [4]. In particular, artificial intelligence (AI) in healthcare has garnered increasing attention in recent years, with the potential to revolutionize how healthcare is delivered [5]. In the field of pharmacy, latent research depicts that AI has the potential to improve accuracy, efficiency, and patient safety [6]. However, adopting AI in pharmacy also raises concerns about potential biases, ethical implications, and the need for adequate training and supervision [7]. Consequently, this systematic review of academic and professional literature aims to evaluate the evidence on the role of AI in fueling the future of pharmacy.

II. PROPOSED METHODOLOGY

A systematic review of the literature was conducted to evaluate the evidence on the role of AI in fueling the future of pharmacy. A comprehensive search of electronic databases (e.g., PubMed, Scopus, Springer, the Cochrane Library, and Web of Science) was conducted to recognize appropriate studies published between 2018 and 2022. The search was restricted to studies published in English and included studies that examined the use of AI in pharmacy practice or education. The reviewer screened the research titles and abstracts and examined their eligibility for inclusion in the evaluation. More importantly, data were extracted from the included studies and analyzed using qualitative and quantitative methods.

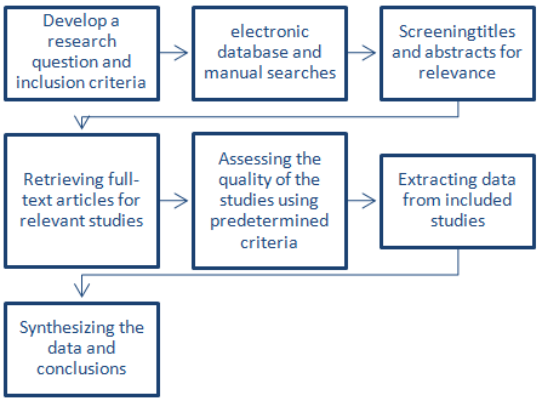
A) Algorithm

The following algorithm was used to guide the systematic review process:

1) Develop a straightforward research question and inclusion criteria. For instance, "What is the role of artificial intelligence in fueling the future of pharmacy?"
2) Conduct electronic database searches and manual searches to categorize appropriate studies published between 2018 and 2022.
3) Screen titles and abstracts for relevance.
4) Retrieve full-text articles for relevant studies.
5) Assess the quality of the studies using predetermined criteria.
6) Extract data from included studies. Data were extracted from the included studies and had information about the study design, sample size, results, and other relevant details.
7) Synthesize the data and conclusions. The extracted data was synthesized and analyzed using qualitative and quantitative methods.

B) Flow Chart/Block Diagram

The proposed methodology can also be illustrated using a flow chart, as shown below:



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III. RESULTS AND DISCUSSIONS

A total of 15 studies were included in the review. The review results suggest that AI can improve pharmacy practice by increasing efficiency, accuracy, and patient safety [8][9]. For example, AI-powered systems can assist pharmacists in medication reconciliation and drug interaction checking, reducing errors and improving patient safety [10]. Additionally, AI can assist pharmacists in identifying patterns in patient data and providing personalized recommendations, improving patient care and outcomes [4][11].

However, using AI in pharmacy also raises concerns about potential biases, ethical implications, and the need for adequate training and supervision [7][12]. Some studies have found that AI algorithms can exhibit biased outcomes due to the data they are trained on, which could negatively affect patient care [7][13]. In addition, using AI in healthcare raises ethical questions about allocating resources and distributing benefits and risks [14]. Therefore, it is vital to consider the potential impacts of AI on pharmacy practice carefully and to address any ethical concerns that may arise. Additionally, the review identified a need for adequate training and supervision of AI systems in pharmacy practice [15]. In that case, the future adoption of AI in pharmacy requires pharmacists to have the necessary skills and knowledge to use these systems effectively [15]. Consequently, there is a need for ongoing education and training to ensure that pharmacists are prepared to work with AI.

IV. CONCLUSION

Overall, this systematic review suggests that AI has the potential to improve pharmacy practice by increasing efficiency, accuracy, and patient safety. It also has the potential to significantly enhance the field of pharmacy by automating routine tasks, analyzing large amounts of data, and providing decision support to pharmacists. While the results of this systematic review suggest that AI has the potential to impact pharmacy practice in the future, several challenges and concerns need to be addressed. For instance, adopting AI in pharmacy also raises concerns about potential biases, ethical implications, and the need for adequate training and supervision. Further exploration is necessary to fully understand the effect of AI on pharmacy practice and address the challenges and concerns raised by AI in this field. With that in mind, it is essential to consider the potential benefits and challenges of using AI in pharmacy and implement and evaluate AI models responsibly and ethically.

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Special Award (If any): She achieved the India Book of Records, America Book of Records, and Triumph World Record as well as received ISSN Awards, Gold Presidential volunteer service award, and Silver and Bronze Congressional awards.
Any other remarkable point(s): Within the short span of 17 years, She has been studying and traveling to over 8 countries/ 3 continents around the globe. She explored different cultures and initiated to learn 7 different languages. She is a registered multiple "World Record" holder in different categories.

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