


Chapter 14

Unveiling the Transformative Landscape: A Bibliometric Exploration of AI Integration in Healthcare

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ABSTRACT

This study uses bibliometric analysis to investigate the methods, thematic insights, and revolutionary possibilities of AI integration in healthcare. It provides insights into the evolution of AI in healthcare through topic mapping, keyword co-occurrence, co-citation, and bibliographic coupling. Keyword co-occurrence highlights important themes like federated learning, digital healthcare, and the internet of things, while co-citation analysis identifies emerging subjects like federated machine learning. The relationships between different research streams and the effects of explainable AI and machine learning on healthcare IT are made clear by the bibliographic coupling. Thematic mapping offers a graphic synopsis of several subjects, from systemic modifications to technical innovations. By educating stakeholders, this study helps them make decisions and sets the stage for future research. It directs efforts to maximize AI's potential for bettering patient outcomes and providing healthcare to practitioners, policymakers, and researchers.

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INTRODUCTION

The use of AI in medical settings has recently attracted the interest of scholars and professionals all over the globe. Roboticquet and Ramsundar (2019) state that artificial intelligence's ability to mimic human intellect and do out activities that often necessitate human cognition might drastically alter numerous facets of patient care, diagnosis, and therapy. In the face of increasing demand and decreasing resources, the healthcare business is confronted with a multitude of difficulties, including the need to improve patient outcomes, increase operational effectiveness, and manage costs (Obermeyer & Emanuel, 2016). Artificial intelligence (AI) stands out as a game-changing technical advancement in this regard.

One of the most well-known uses of artificial intelligence in healthcare is medical diagnosis. The use of complicated algorithms and machine-learning techniques allows AI-driven systems to sift through mountains of patient data, such as genetic information, medical records, and imaging studies, assisting doctors in arriving at correct diagnoses and treatment choices (Davenport & Kalakota, 2019). Some areas where AI-driven diagnostic technologies have proven to be more accurate than human specialists include cancer, neurological illnesses, and cardiovascular ailments.

In addition, AI makes it possible to personalize treatment approaches based on each patient's unique traits, preferences, and genetic makeup. Healthcare practitioners can give individualized treatments that improve efficacy while avoiding bad effects by evaluating huge databases and predicting patient reactions to various medications (Gulshan et al., 2016). The goal of healthcare organizations using AI-powered predictive analytics is to avoid and respond to public health disasters by allowing them to foresee disease outbreaks, identify vulnerable populations, and allocate resources efficiently. Artificial intelligence algorithms can improve healthcare delivery systems and disease surveillance by analyzing data from various sources, including environmental factors, socioeconomic determinants of health, and electronic health records (EHRs). This, in turn, allows for proactive interventions and informed policy decisions (Lipton et al., 2015).

There are a number of issues that need fixing before AI may be used extensively in healthcare. It is important to give serious thought to the ethical and practical concerns raised by data openness, privacy, security, and prejudice (Rajkomar et al., 2018). To make sure AI helps out, not hurts, the human side of healthcare delivery, experts in the field need specific training on how to use AI tools and understand what they mean (Char et al., 2018).

Notwithstanding these obstacles, artificial intelligence (AI) has the potential to revolutionize healthcare administration and clinical practice by fostering creativity, entrepreneurship, and teamwork. Synergies between artificial intelligence (AI), robots, big data analytics, and the IoT have the potential to inspire innovative medical research and reshape healthcare delivery paradigms (Topol, 2019).

Collaboration among stakeholders is being fostered through public-private partnerships, research consortia, and AI innovation centers to speed up the development and use of AI in healthcare (Krittanawong et al., 2018). Using science mapping in bibliometric analysis, this research seeks to delve into the complex ways in which AI is changing healthcare, with a focus on how it affects healthcare administration, clinical procedures, and the final results for patients. The research tries to accomplish undermentioned research questions:

RQ1. How do different methods of science mapping, including co-citation analysis, bibliographic coupling, and keyword co-occurrence analysis, contribute to our understanding of applications of AI in Healthcare?

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