Leveraging AI in Oncology and Enhancing Patient Satisfaction -- Review Literature

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Abstract

Introduction: As technology continues to advance, Artificial Intelligence applications have emerged as powerful tools that not only aid in diagnosing and treating cancer but also significantly enhance the overall satisfaction of patients. By streamlining processes, providing personalized care, and improving communication, Artificial intelligence (AI) has the potential to transform the patient experience and improve outcomes in oncology. This article explores how AI is enhancing patient satisfaction in the field of oncology.

Objective: To gain insight into the areas of AI in oncology, decision-making, patient satisfaction, and their measurements, the review primarily utilized search engines and relied on published articles.

Methods: The review employed a descriptive cross-sectional research design, utilizing secondary sources that are related to AI in oncology, specifically focusing on decision-making and patient satisfaction. Limited studies have explored patient satisfaction using Chabot. The review primarily cantered on identifying concepts related to the implementation of AI in oncology clinical settings. Additionally, it examined the applications of machine learning, virtual assistance, Chabot's.

Results: The results of AI in oncology clinical practice, particularly in the context of patient satisfaction using artificial intelligence, have shown promising outcomes like Chabot's powered by AI. It has been increasingly utilized as a means to enhance patient engagement, provide support and improve overall satisfaction in cancer care settings. Limited studies to explore the patient satisfaction level with AI.

Conclusion: The integration of AI in oncology has the potential to revolutionize cancer care by improving patient satisfaction and treatment outcomes. From early detection and diagnosis to personalized treatment planning, predictive analytics, virtual assistants, remote monitoring, and survivorship support, AI empowers both patients and healthcare providers to deliver more personalized, compassionate, and efficient care. As AI continues to evolve, it will undoubtedly contribute to a brighter future for oncology patients, fostering a sense of empowerment, satisfaction, and improved overall wellbeing throughout their cancer journey.

Keywords: Oncology; Artificial Learning; Machine Learning; Chabot; Patient Satisfaction; Diagnosis

Abbreviations

AI: Artificial Learning; MI: Machine Learning

Introduction

In recent years, artificial intelligence (AI) has emerged as a powerful tool in the field of oncology, revolutionizing the way cancer is diagnosed, treated, and managed. Beyond its clinical applications, AI has also shown tremendous potential in enhancing patient satisfaction throughout the cancer care journey [3,7]. This article explores how AI is being employed in oncology to improve patient satisfaction and overall treatment outcomes, leading to a more personalized and compassionate approach to cancer care. Using AI in the field of oncology has the potential to enhance effectiveness, safety, and accessibility within the sector [10,14,30]. This application aims to elevate the quality of patient care and enhance safety measures in healthcare. The creation and utilization of AI technology, despite its difficulties, also come with significant financial expenses.

Advantages of AI in healthcare settings

Enhanced diagnostic accuracy

One of the key areas where AI excel is in improving diagnostic accuracy AI algorithms [22], when trained on vast amounts of medical data, can analyse and interpret imaging scans, pathology reports, and genetic profiles with remarkable precision. Assisting radiologists and pathologists in detecting tumours and predicting cancer progression reduces the risk of misdiagnosis and enables timely intervention. This accuracy not only boosts patient confidence in their diagnosis but also ensures appropriate treatment plans are implemented from the start, leading to improved satisfaction and outcomes.

Personalized treatment plans

Each patient's journey with cancer is unique, and tailoring treatment plans to individual needs is crucial for optimal outcomes and patient satisfaction. AI algorithms can analyse vast amounts of patient data, including medical records, genetic information, and treatment outcomes, to identify patterns and develop personalized treatment strategies [13]. By considering a patient's specific characteristics, such as genetics, lifestyle, and comorbidities, AI can provide oncologists with valuable insights and recommendations, enabling them to develop more effective and personalized treatment plans. This personalized approach empowers patients by involving them in decision-making processes and increases their satisfaction with the treatment they receive.

Remote monitoring and virtual care

AI-powered technologies have facilitated remote monitoring and virtual care, enabling patients to receive quality care from the comfort of their homes. Wearable devices and smartphone applications equipped with AI algorithms can continuously monitor patients' vital signs, detect changes, and provide real-time alerts to healthcare providers. [3.9] This proactive approach to monitoring improves patient satisfaction by reducing hospital visits, minimizing wait times, and enhancing convenience. Moreover, AI-driven virtual assistants can answer patient queries, provide medication reminders, and offer emotional support, ensuring patients feel connected and supported throughout their cancer journey.

Improved communication and patient engagement

Effective communication between patients, caregivers, and healthcare providers is essential in oncology care. AI-powered Chatbot and natural language processing algorithms enable efficient and empathetic communication, offering patients prompt responses to their queries and concerns [17]. These virtual assistants can provide educational resources, schedule appointments, and even offer emotional support, reducing anxiety and enhancing patient satisfaction. Furthermore, AI can analyse patient feedback and sentiments from social media platforms and surveys to identify areas for improvement and implement changes that address patient needs, ultimately leading to a higher level of satisfaction.

Predictive analysis for proactive care

AI'S predictive analytics capabilities have the potential to transform oncology care by identifying high-risk patients and facilitating proactive interventions. By analysing a combination of clinical data, treatment outcomes, and patient characteristics [27]. AI algorithms can predict the likelihood of disease occurrence, treatment response, and potential side effects. This information enables healthcare providers to intervene early, adjust treatments plans and provide personalized support, thereby improving patient satisfaction and overall quality of life.

Advancing patient satisfaction using digitalizing era

Machine learning, a facet of AI, has exhibited notable relevance in the realm of healthcare, showing its capacity for intricate dia-

logue handling and adaptable conversational capacities [21,44]. Progress in the field of MI has yielded advantages in terms of precision, decision-making, rapid data processing, cost efficiency, and the management of intricate information. chatbots, alternatively labelled as chattering robots, intelligent bots, conversation agents, digital aides, or cognitive agents exemplify AI systems that have emerged from the evolution of MI.

Materials and Methods

A descriptive cross-sectional research design, utilizing secondary sources PubMed, Google Scholar, Cinhal, Embed, and Scopus were searched using relevant terms that are related to AI in oncology, specifically focusing on decision making and patient satisfaction. The review aimed to describe and summarize the current state of AI technology in oncology, particularly concerning how it affects medical decisions and the overall satisfaction of patients.

Limitations of this study

The review of the literature and the search for AI-related databases for oncology and patient satisfaction come with a few inherent limitations. One of these pertains to the fact that a single reviewer was responsible for conducting the review, potentially introducing bias and constraining the scope of findings. Moreover, our review encompassed a wide spectrum of healthcare subjects, leaving room for certain areas to be more extensively explored. In addition, the number of studies for each sub-session focusing -on AI application in oncology, AI - Patient satisfaction, was limited due to scarcity of research in this domain. In forthcoming research, it would be prudent to refine the search strategy to uncover possibly overlooked sources.

Conclusion

The incidence of cancer is on the rise, paralleled by an increasing count of cancer survivors. This uptick can be attributed, in part, to advancements in treatment methods and early detection [16]. These survivors often grapple with additional health challenges like infections, chronic ailments, psychological issues, and sleep disruptions, which frequently necessitate specialized care that many healthcare providers may not fulfill entirely (including medical, psychosocial, informational, and proactive support) [1]. A portion of these individuals require assistance even after being discharged from hospitals or completing treatment regimens. For the elderly population in particular, maintaining independence and self-sufficiency within their home environment holds significant

importance [2]. The introduction of AI - Chatbot /Virtual assistance could potentially address some of these concerns by alleviating pressure on the healthcare system and promoting autonomous living [2]. However, the human factor in the field of healthcare remains indispensable and enduring, even after establishing a solid framework for the secure and efficient use of technology.

Conflict of Interest

The authors have no conflict of interest or funding resource to disclose.

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