Received date: 16-05-2023 | Accepted date: 18-05-2023 | Published date: 07-07-2023

Beyond the Beats: Leveraging AI and Big Data in Empowering Atrial Fibrillation Patients for a Life of Quality - A Comprehensive Review

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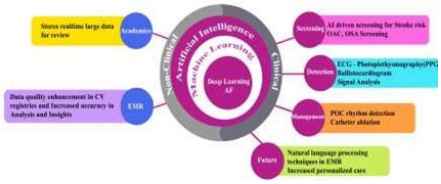
Abstract: Atrial fibrillation (AF) is a common cardiac arrhythmia associated with reduced quality of life (QoL) and increased morbidity and mortality. With advancement of technology and integration of big data and artificial intelligence (AI) presents new opportunities to enhance AF management and patient outcomes. This abstract summarizes the findings of multiple studies from last decade exploring the role of AI and big data in AF diagnosis, treatment optimization, and QoL improvement. The comprehensive review highlights the diverse applications of AI in AF screening, detection, AF management and its potential in this field. Leveraging big data, early diagnosis, personalized care, advanced technologies, and patient-centered approaches, minimizing need for human input in data management, AI demonstrates promise in improving AF outcomes by allowing for timely interventions to prevent disease progression and optimizing QoL for affected individuals. Leveraging Big Data Sources such as electronic health records, wearables, and diagnostic tests enables early detection of AF episodes, Machine learning algorithms assist in optimizing treatment strategies by predicting stroke risk and guiding anticoagulation therapy decisions, leading to better outcomes and reduced risk of debilitating outcomes. AI-supported technologies such as remote monitoring systems and decision-support tools empower patients to actively participate in their care, ultimately improving QoL outcomes. The review also evaluates the cost-effectiveness of AI-driven screening strategies for identifying undiagnosed AF in primary care, screening for AF in populations with obstructive sleep apnea using AI-based methods, data quality enhancement in cardiovascular registries, signal analysis, and symptom evaluation.

Conclusion: Integration of AI and big data in AF management holds great promise for improving QoL in affected individuals. Early AF detection, personalized treatment strategies, and patient- centric care contribute to enhanced outcomes. Further research and implementation of AI-driven interventions are necessary to fully exploit their potential in AF management and QoL improvement. By harnessing the power of AI and big data, healthcare providers can optimize AF management, reduce symptom burden, and ultimately improve the QoL of patients living with this chronic condition.



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Biography

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