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Letter to the Editor

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How Effective is ChatGPT as a Guide for Critical Care and Resuscitation During Basic and Advanced Life Support Scenarios?

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Dear Editor

Cardiac arrest and stroke are critical health emergencies with high mortality rates, making them leading causes of death worldwide. These conditions strike suddenly and require immediate intervention to improve survival outcomes and minimize long-term disabilities [1]. Despite established algorithms from reputable organizations such as the American Heart Association (AHA), the persistently high mortality associated with cardiac arrest and stroke often stems from a lack of prompt action in crucial moments. [2]. AI-based large language models, such as ChatGPT, can be applied effectively in the context of cardiac arrest and stroke emergencies by providing immediate and contextually relevant guidance [3]. Leveraging natural language processing capabilities, this technology can offer dynamic decision support by generating human-like responses based on established algorithms and medical protocols. The study aims to evaluate how ChatGPT can fill this gap and enhance the decision-making process in critical care and resuscitation scenarios.

ChatGPT 3.5 was utilized to generate responses based on simulated scenarios obtained from ACLS Medical Training – an online source [4]. The study was divided into two parts. Part 1 focused on BLS, incorporating a series of 10 questions aligned with the AHA BLS algorithm for a cardiac arrest case. Part 2 involved three ACLS mega code scenarios: Acute Stroke (7 questions), Ventricular Tachycardia (10 questions), and Pulseless Electrical Activity (8 questions) [5].

The study yielded nuanced results, shedding light on ChatGPT's efficacy in guiding rescuers through diverse emergency scenarios. In the Basic Life Support (BLS) segment, the AI system demonstrated a moderate accuracy of 40%. This suggests a notable but improvable performance in providing guidance for fundamental life-saving measures. The lower accuracy in this context emphasizes the need for fine-tuning and refinement to better align with the American Heart Association's BLS algorithm.

Moving to the Advanced Cardiovascular Life Support (ACLS) mega code scenarios, ChatGPT showcased commendable performance, particularly in guiding through cases of Ventricular Tachycardia, where it achieved an accuracy of 80%. This suggests that the AI system is proficient in assisting complex cardiac arrhythmias. The Acute Stroke scenario also demonstrated substantial accuracy, with a rate of 71.43%, highlighting ChatGPT's potential in guiding rescuers through cerebrovascular emergencies.

However, the system's performance showed some variability, with a comparatively lower accuracy of 62.5% in guiding through Pulseless Electrical Activity scenarios. This result underscores the importance of ongoing refinement to address specific challenges posed by different types of emergencies. Analyzing these outcomes collectively reveals ChatGPT's potential to be a reliable guide in ACLS scenarios, though areas of improvement persist, especially in specific contexts such as Pulseless Electrical Activity.

The variations in accuracy across scenarios indicate the need for a nuanced approach to training and refining ChatGPT, considering the intricacies of different medical emergencies. Hence, while ChatGPT demonstrated promise in certain aspects of guiding rescuers through critical care scenarios, the study highlights its current limitations. The moderate accuracy in BLS and variability in performance across ACLS mega code scenarios suggest that ChatGPT, in its current state, may not be deemed a highly reliable source during emergencies. Caution is warranted when considering its use as a primary decision-making tool in time-sensitive situations. The study serves as a foundational step in understanding the potential and limitations of AI in emergency medical guidance, emphasizing the need for further development and validation before widespread adoption in real-world settings.

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