

Evaluating AI-Assisted Clinical Documentation with Medical Student Perceptions of CarePilot in Simulated Encounters: A Cross-sectional Study

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Abstract

Background: Artificial Intelligence (AI) is transforming healthcare by streamlining clinical documentation and enhancing physician workflow. AI-powered systems, such as CarePilot, have the potential to reduce administrative burdens and mitigate physician burnout by automating tasks like transcribing patient encounters and predicting medical coding.

Objective: This study evaluated the experiences of medical students using the CarePilot system during a simulated clinical encounter, thereby providing insights into its usability and potential impact on clinical documentation practices.

Methods: In this cross-sectional study conducted at the Burnett School of Medicine at Texas Christian University, 44 third- and fourth-year medical students participated in a standardized simulation featuring a patient with a chief complaint of headache. Participants were tasked with recording patient history, physical examination findings, clinical reasoning, and management decisions using CarePilot, which was configured to emulate a typical electronic health record workflow. Following the encounter, each participant completed a 27-question electronic survey based on a Likert scale, designed to assess aspects such as ease of use, documentation efficiency, and overall system functionality.

Results: Survey results revealed that over 75% of respondents rated key features—including ease of use, learnability, interface likability, and documentation organization—positively. However, approximately 30% of participants expressed neutral or dissatisfied opinions regarding overall satisfaction, citing workflow disturbances and limitations in functionalities that could impact patient interaction time.

Conclusions: These findings suggest that while CarePilot is generally effective and user-friendly, targeted refinements in workflow integration and feature set are needed to further optimize its clinical application and support improved physician-patient engagement.

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Original Manuscript

Evaluating AI-Assisted Clinical Documentation: Medical Student Perceptions of CarePilot in Simulated Encounters

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The authors have no competing interests.

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Abstract

Artificial Intelligence (AI) is transforming healthcare by streamlining clinical documentation and enhancing physician workflow. AI-powered systems, such as CarePilot, have the potential to reduce administrative burdens and mitigate physician burnout by automating tasks like transcribing patient encounters and predicting medical coding. This study evaluated the experiences of medical students using the CarePilot system during a simulated clinical encounter, thereby providing insights into its usability and potential impact on clinical documentation practices.

In this cross-sectional study conducted at the Burnett School of Medicine at Texas Christian

University, 44 third- and fourth-year medical students participated in a standardized simulation featuring a patient with a chief complaint of headache. Participants were tasked with recording patient history, physical examination findings, clinical reasoning, and management decisions using CarePilot, which was configured to emulate a typical electronic health record workflow. Following the encounter, each participant completed a 27-question electronic survey based on a Likert scale, designed to assess aspects such as ease of use, documentation efficiency, and overall system functionality.

Survey results revealed that over 75% of respondents rated key features—including ease of use, learnability, interface likability, and documentation organization—positively. However, approximately 30% of participants expressed neutral or dissatisfied opinions regarding overall satisfaction, citing workflow disturbances and limitations in functionalities that could impact patient interaction time. These findings suggest that while CarePilot is generally effective and user-friendly, targeted refinements in workflow integration and feature set are needed to further optimize its clinical application and support improved physician-patient engagement.

Introduction

Artificial Intelligence (AI) is revolutionizing healthcare, particularly in the realm of clinical documentation and physician workflow optimization. The integration of AI-powered tools for transcribing patient interactions and generating medical notes has shown promising results in reducing the administrative burden on healthcare providers. [1,2] As physicians spend an average of two hours daily on computer-based documentation, these technological advancements aim to address a significant contributor to physician burnout. [3]

The medical field has already begun to integrate dictation into daily practice to reduce the time consumption that manually writing notes requires. AI has even been utilized to transcribe these manuscripts into physician-styled medical documentation. CarePilot, however, is one of the first to predict medical coding based on the recorded patient encounter. There is plenty of research to suggest that AI will be incorporated into medical practices as this technology continues to evolve. It is predicted to be of value to multiple different medical specialties and has the potential to decrease charting-related administrative waste by freeing up clinicians' time to focus on their patients. [4,5]

Recent studies have demonstrated the potential of AI-powered clinical documentation tools to enhance efficiency and accuracy in healthcare settings. [6] These systems not only transcribe conversations but also structure data, annotate notes, and even suggest clinical phenotypes and diagnoses. [7] The implementation of such technologies has shown promising results, with some healthcare organizations reporting significant time savings and improved documentation quality. [8]

As the healthcare industry continues to explore and refine AI applications in clinical documentation, it is crucial to evaluate physician satisfaction with these platforms. Understanding how healthcare providers perceive and interact with AI-assisted documentation tools will be essential for their successful integration into medical practice and for addressing the ongoing challenges of physician burnout and administrative overload. [9,10]

Methods

Study Design and Setting

This cross-sectional study was conducted at Burnett School of Medicine at Texas Christian University to evaluate medical students' experiences during a simulated clinical encounter using CarePilot services. The study protocol was approved by the Institutional Review Board of Texas Christian University, and all participants provided written informed consent prior to participation.

Participants

Medical students enrolled in the clinical phase of their training (e.g., third- and fourth-year students) were invited to participate via institutional email announcements and classroom announcements. Inclusion criteria required that students be actively participating in clinical rotations at the time of the study. Students with prior extensive experience using the CarePilot system or who had recently participated in similar simulation exercises were excluded to minimize potential bias. A total of 44 students completed the study.

Simulation Scenario

A standardized patient encounter was developed around a chief complaint of headache. The scenario was designed in consultation with clinical faculty and simulation experts to ensure that key elements of history-taking, physical examination, and initial management were addressed uniformly across all participants. Standardized instructions and case materials were provided prior to the encounter to ensure consistency in presentation.

Use of CarePilot

During the simulation, each participant was required to use the CarePilot system to document their patient encounter. CarePilot served as the electronic health record (EHR) platform for this exercise, allowing participants to:

- Record patient history and physical examination findings,
- Document clinical reasoning and differential diagnoses,
- Order and review simulated diagnostic tests or consultations, and
- Interact with the simulated clinical service in real time.

The system was configured to mimic the workflow of a typical clinical encounter, and technical support was available throughout the session to address any issues related to system use.

Procedure

Each simulation session followed a standardized timeline:

1. **Pre-Encounter Briefing:** Participants received a brief orientation outlining the objectives of the simulation and instructions for using CarePilot.
2. **Simulated Encounter:** Participants engaged in a clinical encounter with a standardized patient presenting with a chief complaint of headache. During the encounter, participants documented their findings and management decisions using CarePilot.
3. **Post-Encounter Survey:** Immediately following the simulation, participants were asked to complete a 27-question survey. The survey was administered electronically and took approximately 2-5 minutes to complete.

Survey Instrument

The 27-question survey was developed based on a review of the literature and expert input from

clinical educators. The survey instrument consisted of Likert-scale items [11] evaluating the ease of use, efficiency, and correctness of the CarePilot system. Prior to the main study, the survey was piloted with a small group of medical students and faculty to assess clarity and content validity. Modifications were made based on feedback from this pilot phase.

Data Collection and Analysis

Survey responses were collected electronically via Qualtrics and exported into a secure database for analysis. Descriptive statistics were calculated for demographic variables and Likert-scale responses. All analyses were performed using statistical software.

Results

Patient and Provider Satisfaction with Medical Documentation System

A Likert scale-based survey was conducted to assess user satisfaction with a medical documentation system [11]. The results, as visualized in Figure 1, illustrate the distribution of responses across 25 key survey questions. Responses were categorized into three groups: *Ratings 1-2 (Dissatisfied)*, *Rating 3 (Neutral)*, and *Ratings 4-5 (Satisfied)*.

Overall Satisfaction and Key Findings

The majority of survey respondents reported high levels of satisfaction with the system. Across most survey questions, responses in the *Ratings 4-5 (Satisfied)* category consistently exceeded 75%, indicating a strong positive perception of the system's usability, documentation efficiency, and functional adequacy. Notably, the highest satisfaction scores were observed in the following areas: ease of use, helpful to use, time acceptable for documentation, easy to learn, likability of interface, and well-organized documentation information. These findings suggest that users found the system intuitive, user-friendly, and well-integrated into clinical workflows.

Areas with Notable Neutral or Negative Responses

Despite the predominantly positive feedback, certain categories exhibited relatively higher proportions of dissatisfaction or neutral responses:

- Overall Satisfaction: While the majority of users rated this category positively, approximately 30% of respondents provided neutral or dissatisfied ratings, indicating areas for potential improvement.
- Disturbance: This category had one of the highest dissatisfaction levels, suggesting that users encountered workflow interruptions or usability challenges.
- Expected Functions & More Time with Patients: A notable portion of users (15-20%) reported neutral or dissatisfied responses, implying that while the system met core expectations, some functional aspects may require enhancement to optimize patient interaction time.
- Use Based on Necessity: The presence of dissatisfied and neutral ratings in this category suggests that some users may feel obligated to use the system rather than choosing to do so based on its inherent value.

Implications for Future Improvements

While the survey indicates strong satisfaction levels with most aspects of the system, the identified areas of concern suggest potential avenues for refinement. Addressing usability concerns related to workflow disturbance, functionality expectations, and overall satisfaction could further enhance adoption rates and long-term engagement with the system.

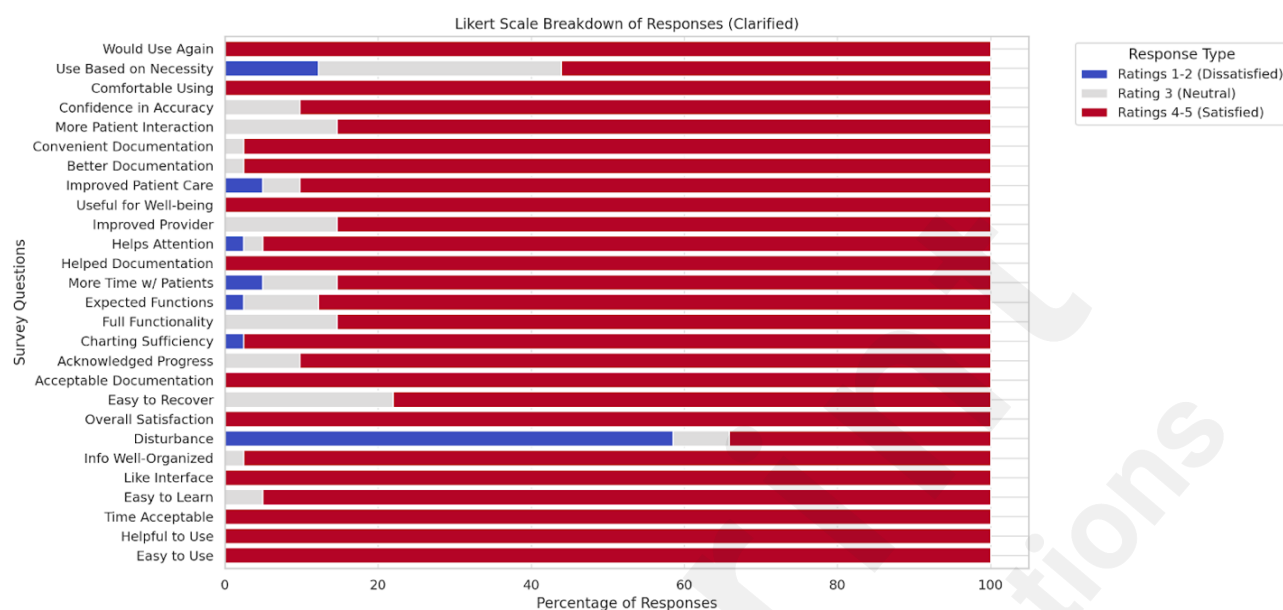


Figure 1: Likert scale breakdown of responses, displaying satisfaction, neutrality, and dissatisfaction across survey questions.

Discussion

The findings of this study indicate that the CarePilot system demonstrates strong usability and efficiency in clinical documentation among medical students, with over 75% of participants expressing satisfaction in key areas such as ease of use, learnability, and documentation organization. These results align with previous research suggesting that AI-driven documentation tools can enhance workflow efficiency and reduce administrative burdens in clinical settings. [10] The positive feedback regarding CarePilot's interface and usability supports the growing interest in AI-based medical documentation solutions as a viable means of streamlining physician workflows and mitigating burnout. [12] Additionally, participants found the system intuitive, which may contribute to reduced cognitive load and increased efficiency in clinical settings.

Previous studies have advocated for the integration of AI in medical training. [13] One of the key strengths of the CarePilot system highlighted in this study is its potential to improve medical education by providing students with structured, AI-assisted documentation support. By allowing users to focus more on clinical reasoning rather than administrative tasks, AI-powered systems can enhance the learning experience and improve documentation accuracy.

Despite the largely positive feedback, some participants identified workflow disturbances and functional limitations that could affect clinical efficiency and patient interactions. Approximately 30% of respondents provided neutral or dissatisfied ratings regarding overall system satisfaction, citing concerns about system integration and workflow disruptions. The literature suggests that while AI documentation tools offer benefits, they require further advancements to effectively capture patient encounters and seamlessly integrate into clinical workflows. [14] Additionally, AI-assisted

documentation must remain under physician supervision to ensure accuracy and clinical appropriateness.

Although CarePilot effectively captures and organizes clinical data, further enhancements could optimize its role in facilitating physician-patient interactions. Prior research suggests that AI-powered documentation tools should not only reduce documentation time but also support better communication between clinicians and patients. [8] Addressing these concerns may involve refining the user interface, improving system responsiveness, and incorporating advanced natural language processing features to enhance real-time documentation capabilities.

Moreover, the study underscores the importance of training and user adaptation. The successful implementation of AI in clinical settings depends on thorough training and adaptation to clinicians' needs to ensure seamless integration into existing workflows. [4] Future iterations of CarePilot should continue incorporating user feedback to enhance adaptability and streamline workflow efficiency.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, it was conducted in a simulated clinical setting, which may not fully reflect the complexities and pressures of real-world clinical environments. The controlled nature of the simulation may have influenced participants' interactions with the system differently than in actual clinical practice. Second, the sample size was relatively small and limited to third- and fourth-year medical students at a single institution, potentially restricting the generalizability of the findings to broader medical populations. Future research should include a larger, more diverse sample and assess the system's impact in real-world clinical settings to validate these findings.

Conclusion

This study provides valuable insights into the usability and impact of the CarePilot system in a simulated clinical setting. The findings suggest that AI-assisted documentation tools can significantly enhance clinical documentation efficiency and usability, aligning with broader trends in healthcare technology aimed at reducing administrative burdens. Additionally, CarePilot has the potential to improve medical education by supporting structured learning and reducing the cognitive load associated with documentation.

Future research should focus on optimizing AI-driven documentation systems to better integrate with existing EHR platforms, enhance real-time data capture, and minimize workflow disturbances. Furthermore, studies should explore the long-term impact of such tools on clinician efficiency, patient outcomes, and burnout mitigation. Addressing these challenges will be essential to ensuring that AI-driven documentation solutions contribute positively to clinical practice while preserving the quality of physician-patient interactions.

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Supplementary Files

Figures

Likert scale breakdown of responses, displaying satisfaction, neutrality, and dissatisfaction across survey questions.

