Exploring the Landscape of Artificial Intelligence in Rheumatology: Insights, Perceptions, and Future Considerations from a Survey of United States Rheumatology Fellows

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Background

Artificial Intelligence (AI) integration into healthcare aims to harness advanced technologies that emulate human-like intelligence, particularly in tasks such as data analysis and decision-making, and to enhance efficiency in patient charting and other administrative tasks. Nonetheless, a notable gap persists in understanding its proper utilization and potential risks.

Objective

This survey-based study seeks to gather perspectives from current rheumatology fellows in the United States (US) regarding their understanding of AI in healthcare, recognizing their pivotal role as the future practitioners in the field of rheumatology.

Methods

The survey, developed using Qualtrics, was distributed via email to all rheumatology program directors and coordinators in the US for dissemination among their fellows. It remained accessible from October to December 2023.

Results

During this period, there were 528 active rheumatology fellows in the US. The survey was accessed by 95 fellows, though not all participants answered every question leading to potential discrepancies in percentage calculations. Among the responses received, 55% identified as female, 38% as male, and 2% chose not to disclose their gender. Fellowship distribution indicated that 55% were in their first year, 34% were in their second year, and 2% were pursuing a third-year research track. In terms of age, 11% were aged 26-29, 66% were aged 30-35, 9% were aged 36-39, and 12% were above 40.

Regarding AI tools, including CHATGPT and Open Evidence, 60% of fellows reported engagement, while 32% denied involvement. Their AI usage included gathering personal information, conducting literature reviews, and composing letters for insurance concerns. A majority (60%) expressed interest in AI training, with 10% disagreeing and 17% remaining neutral (Figure 1). Confidence in AI's potential varied: 44% positive, 8% negative, and 38% neutral, indicating knowledge gaps (Figure 2).

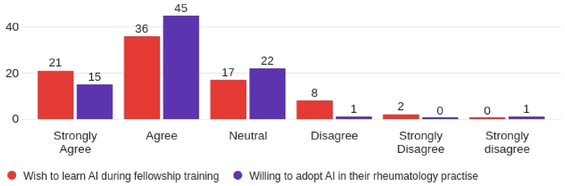

Figure 1 displays a bar graph illustrating the congruence in responses regarding the integration of AI education into the fellowship curriculum and the adoption of AI in future practice.

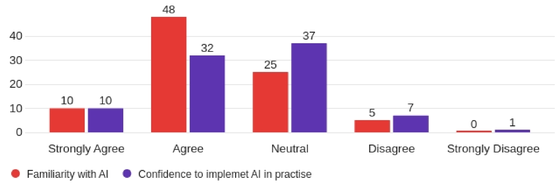

Figure 2 presents a comparison between the awareness levels of rheumatology fellows regarding AI and their confidence in implementing AI in their patient practice

AI-related skills considered beneficial included expediting patient notes (77%), streamlining billing (66%), aiding with prior authorization letters, evidence-based medicine (40%), and imaging analysis (38%). Concerns about AI replacing rheumatologists were dismissed by 74% of fellows, while 10% were neutral, and only 3% agreed.

Concerns about AI implementation included errors in charting/transcription (60%), over-reliance on AI recommendations (54%), AI generating false information (49%), and understanding AI algorithms (47%). Notably, 50% raised concerns about accountability, 34% about diminished face-to-face patient discussions, and 51% about data privacy. Despite challenges, 63% remained optimistic about integrating AI, 23% neutral, and only 2% disagreed.

Discussion

Insights from our survey contribute to the discourse on integrating Artificial Intelligence (AI) in healthcare, particularly in rheumatology. Castagno et al's study [1] emphasizes the incomplete understanding of AI principles among medical professionals and concerns about potential consequences, aligning with our findings of variable awareness levels regarding AI. Paranjape et al [2] and Jha et al [3] stress the necessity for targeted educational initiatives in medical schools, echoing our survey where fellows express a desire to integrate AI training into their fellowship curriculum.

Aspirations for AI to streamline administrative tasks, enhance evidence-based medicine, and improve diagnostic capabilities resonate with sentiments in Topol et al's study [4], reinforcing the shared vision for AI's benefits. Similarly, concerns about errors in AI-generated information, over-reliance, and data privacy echo recurrent themes, emphasizing the universality of these apprehensions, as expressed in Price et al's study [5]. Our survey's identification of ethical considerations aligns with discussions presented by Martinez et al [6].

Conclusion

Supported by the existing literature, our results add a perspective to the current understanding of physicians' perceptions of AI. Continued research efforts will further enhance our comprehension of AI's evolving role in shaping rheumatology and healthcare.

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