Artificial Intelligence and Medical Trainees - Valuable Tool or Learning Impediment?

UCI Health

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Background

- Artificial intelligence (AI) assisted clinical documentation tools are becoming increasingly available across outpatient clinical settings
- Voice to text recognition programs collect audio from patient-provider interactions and use AI to automatically generate notes documenting the encounter
- These notes can then be made available in the electronic health record within minutes
- Though these tools are available to attending physicians, there has been no research on attitudes regarding when such tools should be made available to medical trainees, such as medical students and residents
- We surveyed US medical students, residents, and attending physicians regarding when such tools should be introduced to learners, if at all, and concerns around such tools

Study Design

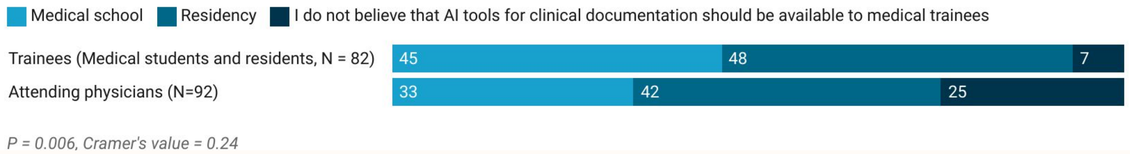
- **Cross-sectional survey**
- **Setting:** Single institution in the Pacific region
- **Study population:** Medical students, resident physicians, fellows, and attending physicians (179 respondents)
- **Study timeline:** Survey available 5/9/24-6/10/24
- **Data collection:**
  - Administered 15 question RedCap survey
  - Assessed respondents demographic and professional characteristics, including gender, highest level of training, percent of time spent in outpatient practice, time spent on patient interactions, and time spent on clinical documentation
- **Study outcomes:**
  - Relationship between respondents' demographic and professional characteristics and what level of training they felt that AI-assisted clinical documentation tools should be available to trainees, should enter the medical record, and specific concerns with regard to their use (not meeting documentation milestones, detriment to patient-provider experience, accuracy, bias, violation of patient privacy, detriment to forming differential diagnoses, detriment to forming plans, and concerns about using personal devices)
- **Statistical analysis:**
  - Chi-squared analysis to determine association between demographic/professional characteristics and outcomes with significance level set at $p < 0.05$
  - Cramer's values calculated to determine strength of association
  - Descriptive characterisation of respondents

Demographic	N	%
Female	89	50
Medical student	36	21
Resident physician	46	26
Attending physician	93	53

Results

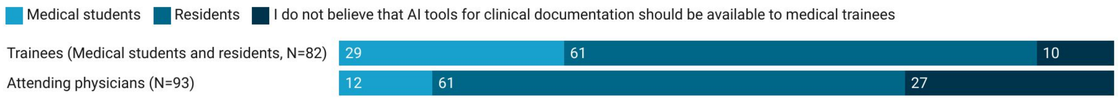
40% of female attending physicians believed that AI tools should not be available to trainees at all, compared to 25% of attending physicians overall and 17% of respondents in general

At what level of training do you feel that AI tools for clinical documentation should be introduced?



P = 0.006, Cramer's value = 0.24

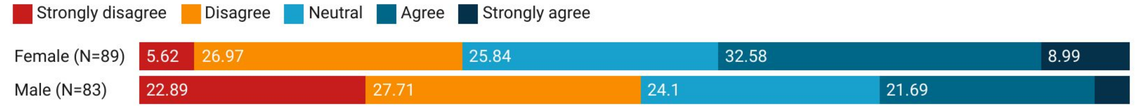
Which trainees do you feel should be able to use AI tools to complete notes that could enter the patient's medical record (H&Ps, progress notes, documenting encounters, etc)?



P = 0.001, Cramer's value = 0.28

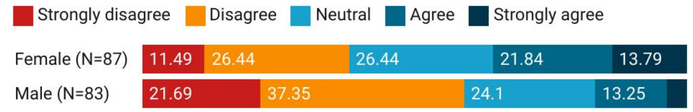
Female respondents were far more likely to agree with the statement **"I am concerned about AI-assisted clinical documentation violating patient privacy"** and far less likely to agree with running the software on a personal device

I am concerned that AI-assisted clinical documentation tools will prevent trainees from achieving clinical documentation milestones.



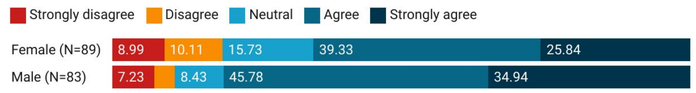
P = 0.04, Cramer's value = 0.25

I am concerned about AI-assisted clinical documentation violating patient privacy.



P = 0.001, Cramer's value = 0.35

I would be willing to run an AI-assisted clinical documentation software on my personal device (smartphone, tablet, etc).



P = 0.04, Cramer's value = 0.23

Area of Practice	N	%
Internal Medicine	18	10
Anesthesiology	17	10
Internal Medicine (subspecialty)	11	6
Neurology	10	6
Pediatrics	10	6
Family Medicine	7	4
Pediatrics (subspecialty)	7	4
Emergency Medicine	5	3
Psychiatry	5	3
General Surgery	4	2
Surgery (subspecialty)	4	2
Dermatology	3	2
Neurological Surgery	3	2
Obstetrics and Gynecology	2	~1
Physical Medicine and Rehabilitation	2	~1
Plastic Surgery	2	~1
Otolaryngology	1	~1
Urology	1	~1
Medical student/not reported	67	37

Summary

- Attending physicians, particularly female attending physicians, felt that AI assisted clinical documentation tools should be introduced to trainees later on and were more likely to believe that trainees should not be able to generate notes using such tools
- Female respondents were far more likely to have concerns about these tools adversely affecting trainees in achieving clinical documentation milestones and were far more likely to have concerns about privacy and use of personal devices surrounding these tools
- Respondents who spent more time with patients (P = 0.01, Cramer's value = 0.19) and more time writing notes (P = 0.03, Cramer's value = 0.20) were less likely to believe that that AI-assisted clinical documentation tools should be available to trainees

Limitations

- Single institution survey
- Responses restricted to provided survey options
- Data not collected on experience with ambient clinical documentation tools within cohort

Discussion

- Previous research has shown that physicians and medical students have positive attitudes and a willingness to learn about AI tools in healthcare
- However, our data suggests that attending physicians and female respondents in general have more concerns about privacy with regard to AI for clinical documentation tools and favor later introduction of such tools to trainees
- While trainees are amenable to learning about AI tools, faculty may recommended delaying the introduction of these tools to residency or later
- More research is needed to better understand why female physicians are more concerned about privacy with regard to AI tools and how these tools should be introduced to medical trainees
- Next steps: conducting interviews with respondents for more nuanced recommendations/understanding of concerns

References

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