Attitudes of Aspiring Orthopedic Surgeons Towards Artificial Intelligence

Results of a Multinational Cross-Sectional Survey Study

Johannes Pawelczyk[1], Moritz Kraus[2], Larissa Eckl[2], Stefan Nehrer[3,4,5], Matthias Aurich[6], Kaywan Izadpanah[7], Sebastian Siebenlist[1], Marco-Christopher Rupp[1]

[1] Sektion Sportorthopädie, Klinikum rechts der Isar, Technische Universität München, München
[2] Schulthess Klinik, Abteilung für Schulter- und Ellenbogenchirurgie, Zürich
[3] Zentrum für Regenerative Medizin, Universität für Weiterbildung Krems, Krems an der Donau
[4] Fakultät für Gesundheit und Medizin, Universität für Weiterbildung Krems, Krems an der Donau
[5] Abteilung für Orthopädie und Unfallchirurgie, Universitätsklinikum Krems, Krems an der Donau
[6] Abteilung für Orthopädie und Unfallchirurgie, Universitätsklinikum Halle, Halle (Saale)
[7] Klinik für Orthopädie und Unfallchirurgie, Universitätsklinikum Freiburg, Freiburg

Contact: Johannes Pawelczyk, Technische Universität München, johannes.pawelczyk@tum.de

Faculty Disclosure Information

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Background & Purpose

- Artificial intelligence (AI) is in the process of transforming healthcare in a fundamental way, including orthopedics[1,2,3]

- While AI-powered solutions are already seeing increasing deployment in clinical and research settings[4,5], the integration of AI into the field of orthopedics is still nascent

- Thus, the attitudes and expertise of the next generations of orthopedic surgeons will be pivotal in defining how AI will shape the field of orthopedics

- The aim of this multinational, cross-sectional survey study was to assess the attitude and expertise of aspiring orthopedic surgeons towards AI

Methods

- An anonymous online survey was disseminated among student members of orthopedic societies in Germany, Switzerland, and Austria

- The survey contained 18 questions assessing attitudes towards AI, prior AI knowledge, self-reported technical aptitude, and perceived challenges and opportunities of AI

- Subgroup analyses were performed to investigate the influence of gender, prior AI knowledge, and self-reported technical aptitude on attitudes towards AI

- Participants indicating no desire to pursue a career in orthopedics were excluded from the analysis

Results

- Of 174 respondents, 150 (86.2%) planned to pursue a career in orthopedics and were included in the analysis

- The majority (40.5%) reported only basic prior AI literacy

- There was no significant increase in AI literacy throughout medical school (p=0.79, cf. **Fig. 1**)

- 35.6% believed AI would have a significant impact on the field of orthopedics within 5 to 10 years, 29.3% within 5 years
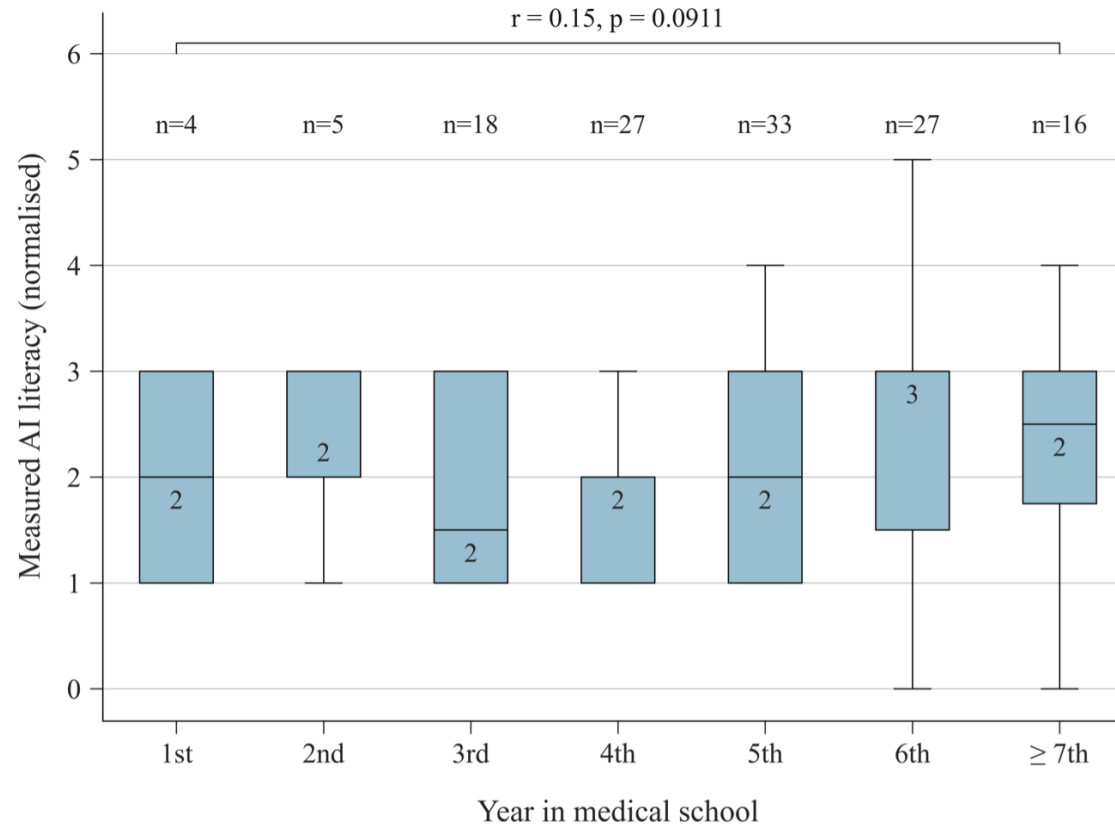
Results

Figure 1. No statistically significant improvement of AI literacy throughout medical school was observed.

Results

- Respondents viewed AI mostly as an assistive technology as opposed to a replacement of human personnel across

  - Core medical tasks, e.g., surgery (90.2%)

  - Other medical tasks, e.g., radiological assessment and anamnesis (82.8%)

  - Administrative tasks (64.4%)

- The following use-cases were perceived as the most promising applications of AI

  - Preoperative surgical planning (85.1%)

  - Automation of administrative tasks (83.3%)

  - Medical image analysis for diagnostics (82.8%)

Results

- Respondents indicated concerns regarding

  - Skill atrophy due to overreliance on technology (70.1%)

  - Legal issues, incl. liability (69.5%)

  - Loss of human contact and empathy (57.5%)

- While 53.2% reported a neutral stance on AI, 39.3% expressed enthusiasm

- A stronger focus on AI literacy in medical curricula was considered important by 82.7% (cf.
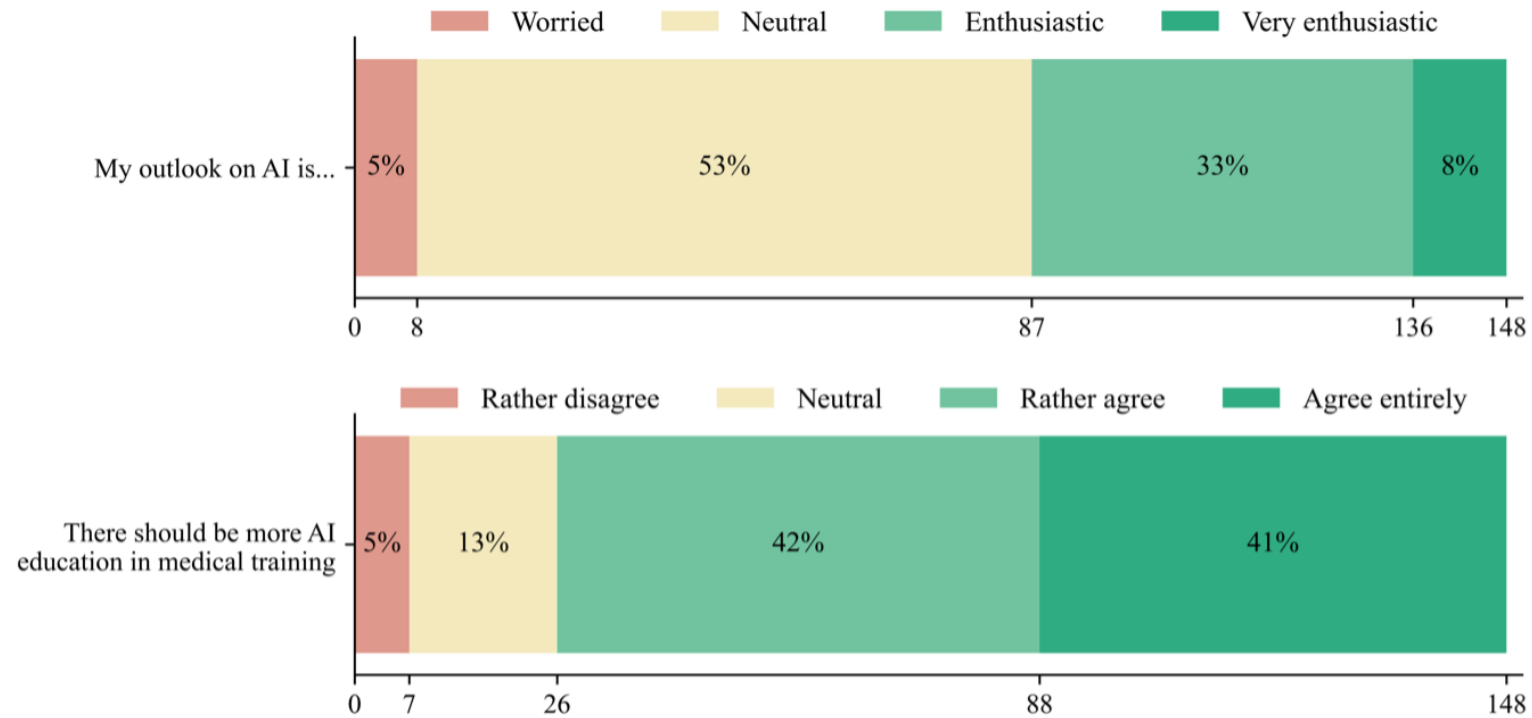 Fig. 2)

Results

Figure 2. Respondents displayed a positive disposition towards AI and indicated a clear demand for improved AI-related educational opportunities.

Results

- Recent AI developments did not have a significant impact on the career choices of aspiring orthopedic surgeons, with 71.2% reporting no influence (cf. **Fig. 3**)

- Of those reporting an influence on their career choices (n=37), most (n=28) felt encouraged to pursue a career in orthopedics due to AI

- There was a statistically significant impact of self-reported technical aptitude (p=0.002) and basic AI knowledge (p=0.017), but not gender (p=0.241) on attitudes towards AI
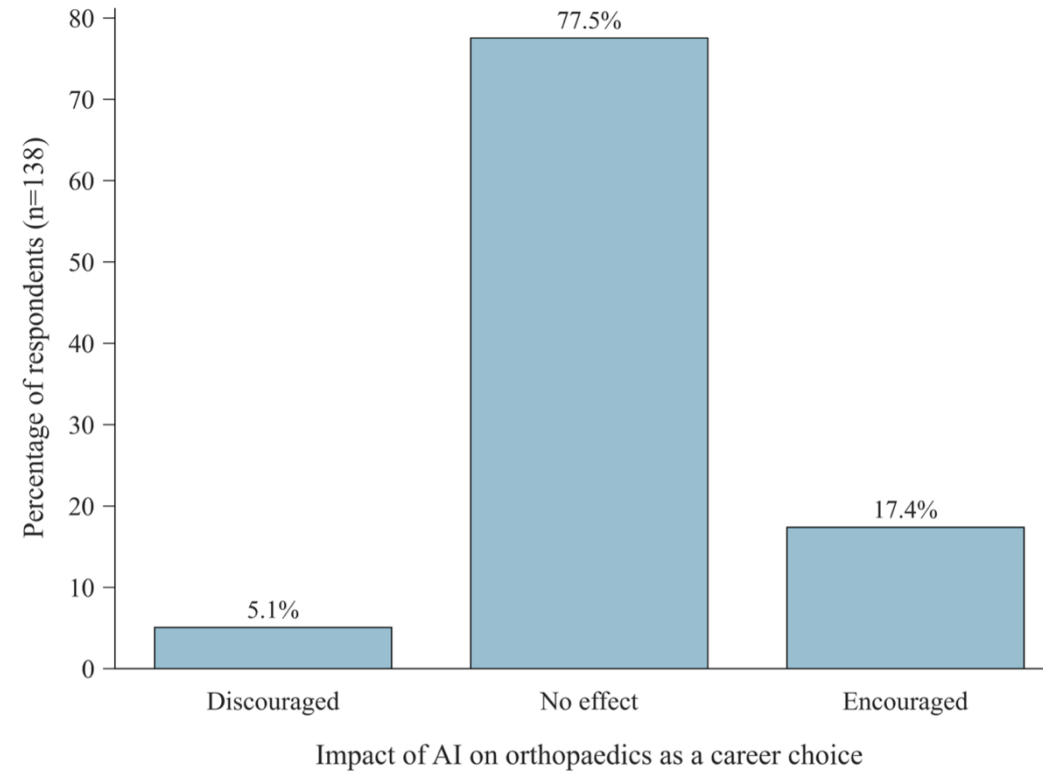
Results

Figure 3. There was no significant impact of recent AI developments on the career choices of prospective residents.

Conclusions

- Aspiring orthopedic surgeons have a positive disposition towards AI, but limited expertise, anticipating a significant impact of AI within 5-10 years

- AI knowledge did not improve throughout medical school, with a clear demand for improved AI-related educational opportunities

- Orthopedic surgery seems to be relatively resilient regarding the impact of recent AI developments on career choices of prospective residents

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