R-AI-diographers: a European survey to explore perceived impact of AI on professional identity, careers, and roles of radiographers

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Introduction

Radiographers are one of the most digitally mature and digitally resilient professions in healthcare. Artificial intelligence (AI) is already changing their clinical practice and roles, due to the advent of new technologies in data acquisition, post-processing and workflow management. It is therefore vital to understand the impact of AI on the careers, roles and professional identity of these professionals.

- Radiographers are expected to work closely with AI technologies, and it has been documented that this technology will require clear career pathways and role extensions for the profession (Malamateniou et al., 2021, https://doi.org/10.1016/j.radi.2021.07.028).
- Previous studies have shown that radiographers had some concerns regarding adoption of AI solutions (Rainey et al., 2021, https://doi.org/10.3389/fdgth.2021.739327).
- It is imperative to explore the impact of AI on the radiography workforce, careers, roles, and professional identity, as well as the level of confidence and awareness of European radiographers regarding AI technology.

Aim: to a) investigate the perceived impact of AI on the radiography workforce and in particular to b) explore the perceived impact of AI on careers, roles and professional identity of radiographers.

Methods

Ethics

Approval was obtained from City St George's, University of London (ETH2223-1346).

Data Collection Instrument

- European-wide, cross-sectional, mixed methods online survey (Qualtrics, Provo, Utah, USA).
- Translated from English into 8 additional European languages.
- The survey included 30 questions capturing radiographer opinions across 3 domains of radiographer responsibilities; patient care, technological skills and 'other' responsibilities.

Participants

Inclusion criteria: a) > 18 years of age, b) being a radiographer in any discipline or role (including students and those working outside clinical roles).

Data Collection

- Snowball sampling.
- Survey open between 03/06/24 to 31/08/24.
- Distributed through the membership and networks of the EFRS and the researchers' professional networks and social media accounts across Europe.

Data Analysis

- Although quantitative and qualitative results were collected, this poster presents only the quantitative results given the enormity of the collected data.
- All data was analysed using the Statistical Package for the Social Sciences (SPSS) (IBM Corp).
- Inferential statistics was also employed to explore relationships between variables including gender, country digital literacy level, age and AI education levels. The level of statistical significance was set to p<0.05.

Results

A total **2,206 valid responses** were received from **37 European countries** (Fig.1).

Demographics

Most popular demographics are shown in Table 1. Almost half (50.4%) reported they had received no AI education and about a quarter were self-taught in AI (Fig. 2).

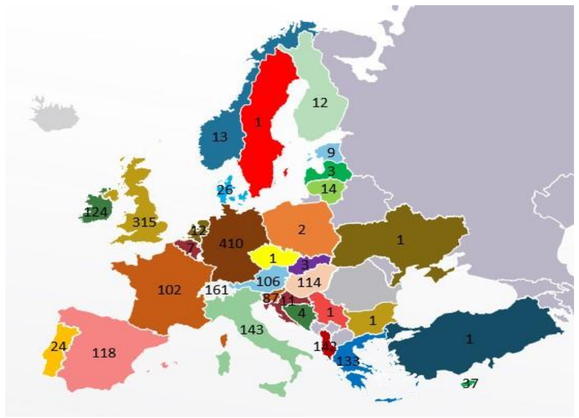


Fig. 1. Geographical distribution of the respondents and frequencies.

AI Impact on Professional Role

- 41.4% disagreed that, with the integration of AI in clinical practice, radiographers will be required to focus mostly on patient care (Fig.3).
- However, they mostly agreed (50.9%) that radiographers, with the help of AI efficiencies, will have more time to spend with patients (Fig.3).
- Similarly, 54.3% disagreed that radiographers will be required to focus mostly on technology.
- 83.6% agreed that, despite the advancements of AI, **image and treatment quality will remain the responsibility of radiographers** and they won't be replaced by AI in these key tasks.
- Almost eight in ten radiographers reported that they expect their **professional roles and identities will need to be reconfigured** in response to AI-driven change (Fig.3).
- Over half of the respondents agreed (57.8%) that **radiographers will have to work closer with other MIRT professionals** in the future (Fig.3).

Results Cont.

Inferential Statistics

- Positive opinions are linked to higher levels of digital literacy, prior AI education and AI experience.
- High digital literacy countries expect radiographers to have greater radiation protection responsibilities with AI implementation (p= 0.027).
- Those with more AI experience had increased agreement that image and treatment quality will remain radiographer responsibility (p= 0.017) and there will be more job & career opportunities thanks to AI (p= <0.001).
- Those having obtained some education in AI believed radiographer roles will evolve significantly with AI integration (p= <0.001) and there will be more job & career opportunities (p= <0.001).

Table 1. The most popular demographic responses.

Demographic	Response	Highest Percentage
Gender	Female	63.9%
Radiography Experience (years)	>20	31.3%
Specialty	Diagnostic Radiographer	59.9%
Highest Academic Qualification	BSc (or DCR or equivalent)	32.7% (17.3% were undergrad students)
AI Knowledge	Basic	58.5%
AI Experience/Use	Never Used AI (to their knowledge)	50.5%
AI Education	None	50.4%

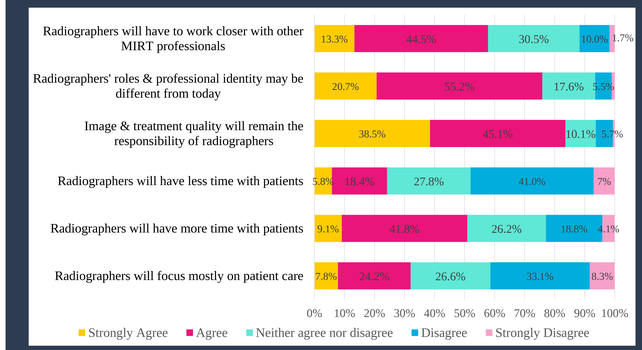


Fig. 3. Bar chart summarising the responses for Likert-type questions. Yellow= Strongly Agree, Red= Agree, Green= Neither Agree nor Disagree, Blue= Disagree and Pink= Strongly Disagree

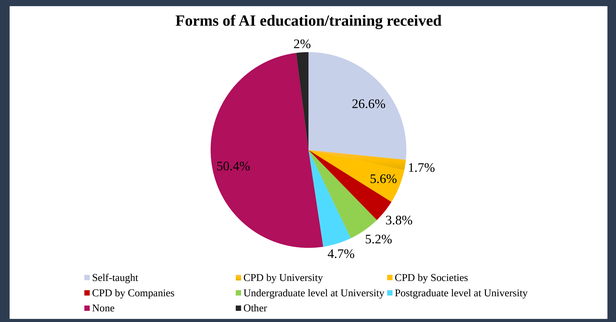


Fig. 2. Forms of AI education/training in which the respondents had participated in.

Discussion Points

- The findings of this study show a promising increase in the AI awareness levels of radiographers.
- AI education has not kept up on this pace. A lack of AI education and expert skills could create distrust in the technology and lack of confidence in using it.
- Most radiographers reported low technical self-efficacy in using AI. Low technical self-efficacy can lead to avoidance behavior, reduced work effort, and outright resistance (Yu and Li, 2022, https://doi.org/10.3390/bs12050127).
- To succeed in providing AI education more funding needs to be set aside by HEIs, more interprofessional collaboration within professional societies needs to be established and more robust guidance should be in place across Europe (Stogiannos et al., 2024, *In Press, J Med Imaging Radiat Sci*).
- Digital literacy mediates the motivation for adoption of AI with high digital literacy priming the opportunity for focusing more on patient care.

Conclusion

European radiographers have overall optimistic views about the use of AI in healthcare, but their AI education and digital literacy need acutely addressing to match the rapid technological advancements. Our findings show that AI experience, digital literacy and AI education show a strong correlation with optimistic views about AI integration. Radiographer role development and interprofessional collaboration is essential for the seamless integration of AI into clinical practice.

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