

Artificial intelligence knowledge, perceptions, and educational needs among undergraduate medical students in Oujda, Morocco: a cross-sectional study

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Content

Annex 1: english version of the questionnaire.



Section 1 – Demographics

1. **What is your age?**
2. **What is your gender identity?**
 - a. Male
 - b. Female
 - c. Non-binary
 - d. Prefer to self-describe: _____
 - e. Prefer not to say
3. **What year of medical training are you currently in (or have most recently completed, if responding during the summer)?**
 - a. 1st year
 - b. 2nd year
 - c. 3rd year
 - d. 4th year
 - e. 5th year
 - f. 6th year
 - g. 7th year
4. **Do you have a background in mathematics, statistics, or computer science?**
5. **Do you have good experience with technology or a high degree of technological literacy?**
6. **Do you have a parent or sibling with a degree related to AI or computer science disciplines?**

Instruction:

According to the scale provided, rate the following statements:

(1) Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly agree

Section 2 – Artificial Intelligence Knowledge and Perceived Usefulness in Medicine

1. AI has especially useful applications in the medical field.
2. Overall, I have good digital skills and competences.

3. I feel well informed about the role of AI in medicine.

In which domains of medicine do you think AI will be particularly useful?

4. Supporting physicians in making a diagnosis.
5. Supporting physicians in making treatment decisions.
6. Supporting physicians directly during treatment.
7. Helping patients manage their own care through AI-based health apps.
8. Improving drug research and development.
9. Supporting personalized medicine.

Section 3 – Advantages and Disadvantages of AI in Medicine

Please indicate how important you find the following possible advantages of using AI in medicine:

13. Analysis of large amounts of clinically relevant data.
14. Making more accurate treatment decisions.
15. Reducing medical errors.
16. Improving cost-efficiency in healthcare.
17. Giving physicians more time for patient discussions and examinations.
18. AI does not get tired and can work continuously.

How important do you consider the following possible disadvantages of using AI in medicine?

19. Cannot be used in unforeseen situations due to insufficient information.
 20. Not flexible enough to be adapted to every patient.
 21. May amplify existing biases in datasets and lead to discrimination.
 22. Can undermine the autonomy of patients.
 23. Can undermine the autonomy of physicians.
 24. Lacks the ability to develop empathy and consider patients' emotional well-being.
 25. May be developed by programmers with limited medical experience.
 26. Causes uncertainty about liability in the event of an error.
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Section 4 – Perceptions About the Future of AI Education in Medicine

- a. I have received training in the use of artificial intelligence in medicine through research or professional experiences.
- b. I have independently educated myself about AI in medicine (e.g., Google, PubMed, academic literature, news).
- c. I feel that my learning opportunities about AI in medicine have been adequate.
- d. I believe it is important that I study AI in medicine more thoroughly.
- e. I feel that limited understanding of programming or mathematics is a barrier to learning about AI in medicine.
- f. Given the opportunity, I would like to learn more about artificial intelligence.