Open Peer Review on Qeios

AI in Healthcare: The New Frontier of Inequalities

Emmanuel Lagarde[1]

1 University of Bordeaux

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

The emergence of artificial intelligence in healthcare is probably leading to another two-speed world. On one hand, widely accessible AI applications such as language models are becoming ubiquitous, while on the other, resource-intensive technologies like robotic surgery and personalized medicine will be reserved for a privileged few. This development signifies a growing disparity in access to AI advancements. The paper also discusses the inevitability of widespread automated medical consultation, and the need for a quality assurance system to oversee the burgeoning use of AI in healthcare.

Emmanuel Lagarde

Emmanuel.lagarde@u-bordeaux.fr

The advent of AI in the healthcare sector is stirring both concerns and hopes. Among the concerns, there is fear of job threats [Al-Sawy 2024], challenges in distinguishing between truth and falsehood, and the ability to objectify model inferences. There is also alarm over risks to personal information integrity and individual freedoms. On the side of hope, despite the current abundance of rhetorical caution, there are mentions of potential benefits such as increases in productivity, enhancements in safety, and time savings that healthcare providers could reallocate from administrative duties to direct patient care.

A count of articles containing the keyword AI, discipline by discipline (see figure), shows that radiology is by far at the forefront of applications, followed by surgery. This trend actually reflects the earlier advances in image analysis and robotics. However, the landscape has recently changed with the advent of generative language models using a special artificial neural network architecture, introduced in 2018, known as Transformer [Vaswani 2017]. This technological revolution opens the door to a two-speed world with, on one hand, language model applications that will become ubiquitous, accessible, often relevant but difficult to control. On the other, high value-added tools, which are resource-intensive and thus reserved for the elite (robotic surgery, personalized medicine). From one population to another, from one level of wealth to another, humans will cope with resources that are often far below what technology can offer. The least resource-intensive systems will be the most used.

While the development costs of a chatbot equipped with medical expertise may seem prohibitive [Sezgin 2024] (financially and in terms of resource and carbon footprint), their occasional use by individuals incurs minimal costs. Access to medical expertise is therefore probably about to become universal. The question of whether this will include the use of sensors interfaced with or embedded in mobile phones is unclear in the short term. Today, validated technologies are relatively few [Majumder 2019]. They utilize cameras, LEDs, and mobility sensors to measure heart rate and variability, to examine the retina, or to identify skin lesions requiring special attention. No other technologies, particularly biochemical ones, have proven themselves in this format to date, and research on smartphone-controlled microfluidic systems has not yet led to mainstream applications.

Even without these sensors, in a context of a dwindling number of healthcare providers, the development and generalization of automatic consultation is inevitable. It will likely be widely shared worldwide, similar to the rapid, global dissemination of mobile telephony [Mensah 2021], a complex technology that has reached even the most remote parts of the globe.

This inevitable evolution is already taking place in a liberalized environment. While the illegal practice of medicine used to be subject to control, and sometimes to repressive action, the necessary structures are not in place today to guarantee the dissemination of harmless, reliable solutions.

The strategy employed by major AI platforms in addressing medical inquiries is indicative of the broader challenge in this domain [Albert 2023]. These AI systems are programmed to consistently direct users to seek professional medical opinions for health-related questions, highlighting their limitation in providing medical advice. It is precisely because this type of service is on the verge of becoming the most widespread and widely accessible AI application in healthcare that it becomes essential to establish a shared quality assurance system.

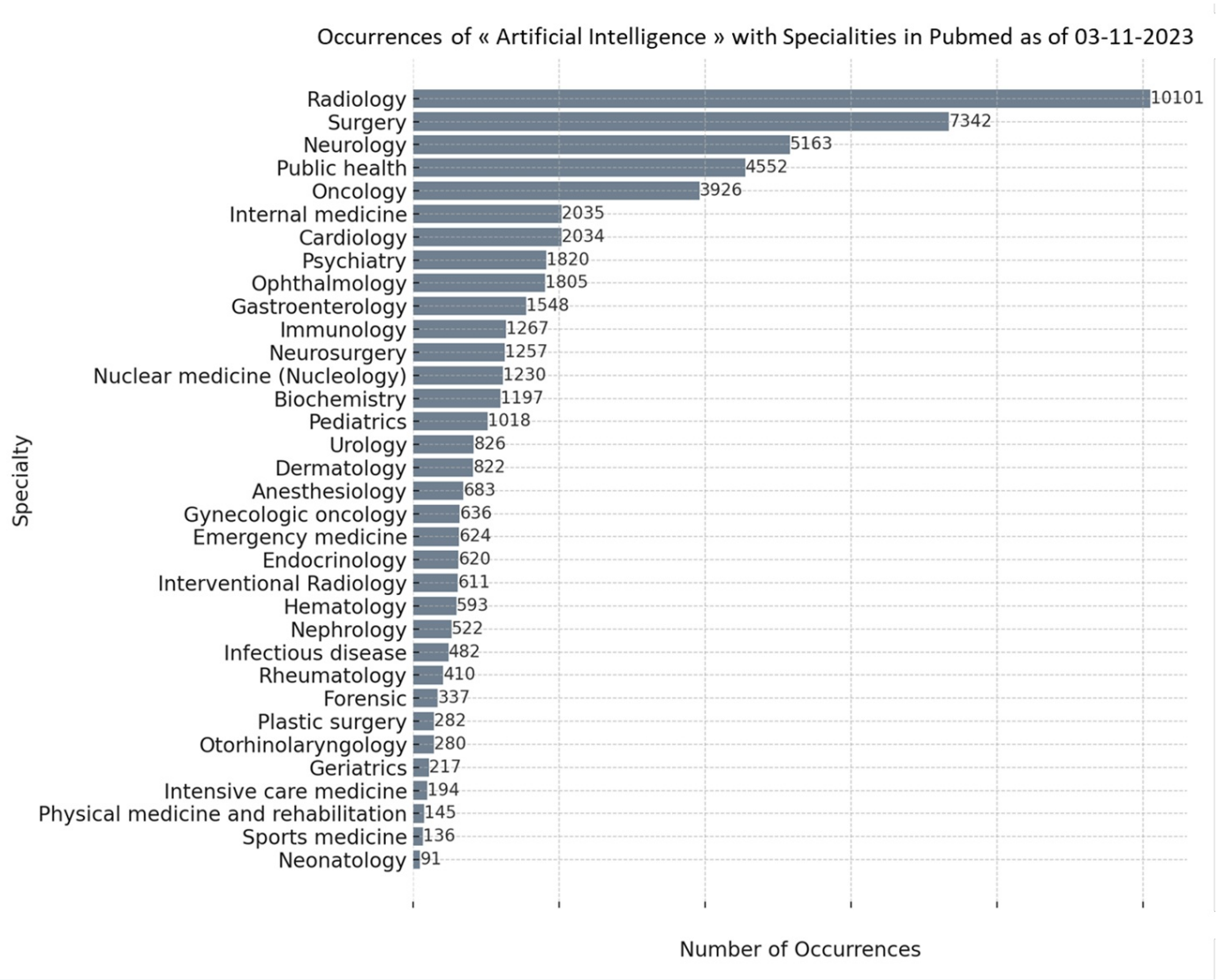

Figure 1.

Statements and Declarations

Authors' contribution

Emmanuel Lagarde is the only contributor to this manuscript

Conflict of interest

The author declares no competing interests

Role of Funding Source

Emmanuel Lagarde is employed by INSERM, a French governmental biomedical research agency. No other funding source was involved in the preparation of this manuscript

References

- Al-Sawy, M. (2024). 'Potential Concerns and Challenges Threatening the Field of Graphic Design in the Era of Artificial Intelligence', International Design Journal, 14(1), pp. 409-419. doi: 10.21608/idj.2023.246754.1098
- Sezgin, E. (2024). Redefining Virtual Assistants in Health Care: The Future With Large Language Models *J Med Internet Res, 26, e53225.*
- Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A., Kaiser, u., & Polosukhin, I. (2017). Attention is All you Need. In *Advances in Neural Information Processing Systems* Curran Associates, Inc..
- Majumder, S., & Deen, M. (2019). Smartphone Sensors for Health Monitoring and Diagnosis. *Sensors (Basel), 19(9).*
- Mensah, J. T. (2021) Mobile Phones and Local Economic Development: A Global Evidence. Available at https://ssrn.com/abstract=3811765
- Albert N (2023). Understanding OpenAI's ChatGPT Content Policies Available at https://www.roborhythms.com/chatgpt-content-policy-guide/