# AI in Healthcare: The New Frontier of Inequality

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## 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. In this context, the role of empathy and emotional aspects in patient care comes to the forefront. With the rise of AI, there's a critical examination of whether synthetic empathy can adequately replace human empathy in patient care, emphasizing the necessity of maintaining human elements in an increasingly automated healthcare environment.

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The advent of AI in the healthcare sector is stirring both concerns and hopes. Among the concerns, there is fear of job threats, 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 1), 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 (financially and in terms of resource and carbon footprint), their occasional use by individuals incurs minimal costs. Access to medical expertise is 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, 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 adopted by Open AI is symptomatic of this challenge, since its chatbot systematically responds to any medical question by saying that a specialist opinion should be taken, and is not capable of providing medical advice. Establishing a shared quality assurance system, therefore, emerges as a crucial priority. Another pressing issue concerns the role of empathy in healthcare. What will be the consequences of the diminishing human contact in patient care? This question is pertinent: Will synthetic empathy be capable of substituting for human empathy in patient care [Perry 2023]? While this query may sound thought-provoking, it is equally important to be concerned about the existing challenges patients face in accessing empathetic caregivers for meaningful conversations.
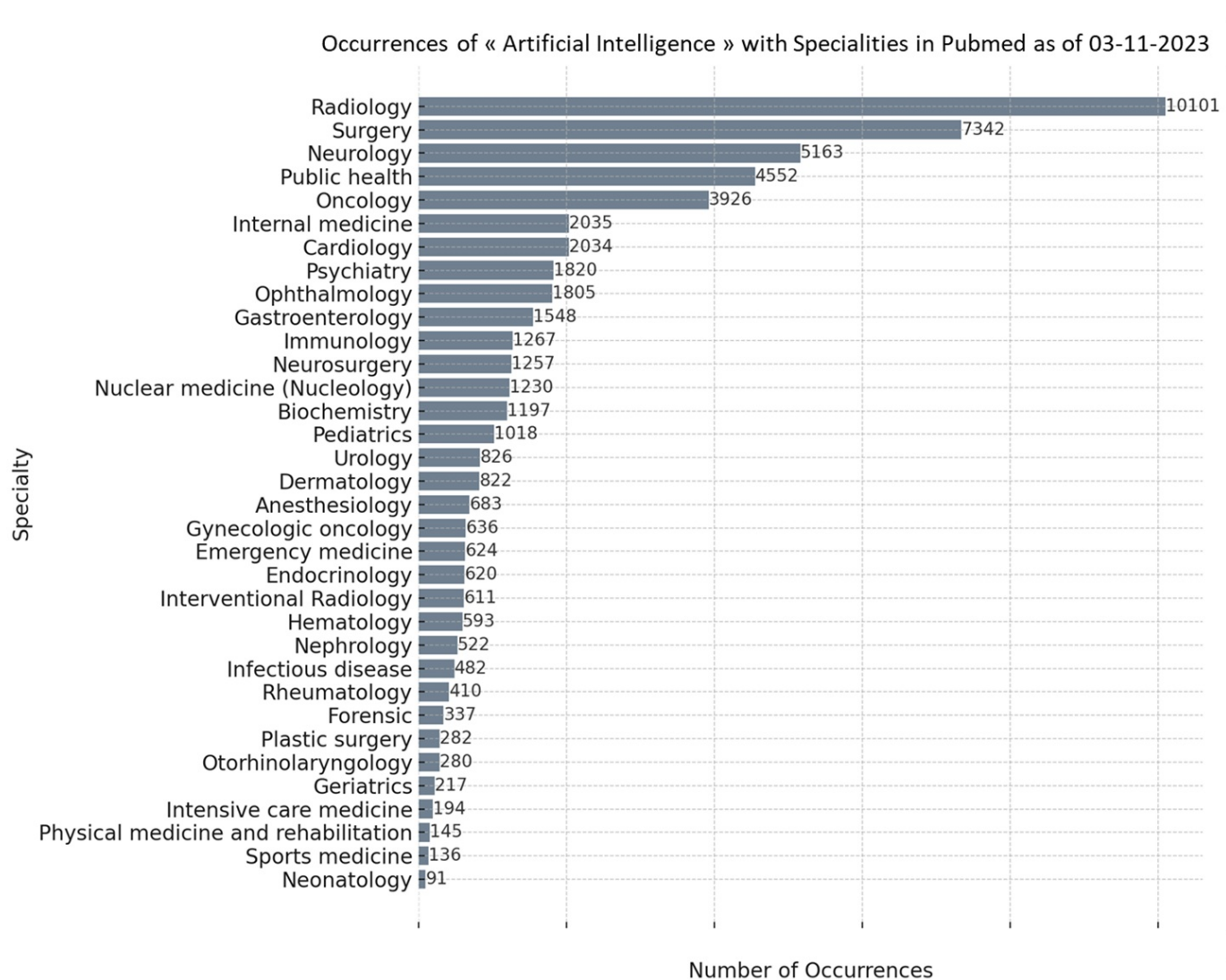
Occurrences of « Artificial Intelligence » with Specialities in Pubmed as of 03-11-2023

| Specialty | Number of Occurrences |
|---|---|
| Radiology | 10101 |
| Surgery | 7342 |
| Neurology | 5163 |
| Public health | 4552 |
| Oncology | 3926 |
| Internal medicine | 2035 |
| Cardiology | 2034 |
| Psychiatry | 1820 |
| Ophthalmology | 1805 |
| Gastroenterology | 1548 |
| Immunology | 1267 |
| Neurosurgery | 1257 |
| Nuclear medicine (Nucleology) | 1230 |
| Biochemistry | 1197 |
| Pediatrics | 1018 |
| Urology | 826 |
| Dermatology | 822 |
| Anesthesiology | 683 |
| Gynecologic oncology | 636 |
| Emergency medicine | 624 |
| Endocrinology | 620 |
| Interventional Radiology | 611 |
| Hematology | 593 |
| Nephrology | 522 |
| Infectious disease | 482 |
| Rheumatology | 410 |
| Forensic | 337 |
| Plastic surgery | 282 |
| Otorhinolaryngology | 280 |
| Geriatrics | 217 |
| Intensive care medicine | 194 |
| Physical medicine and rehabilitation | 145 |
| Sports medicine | 136 |
| Neonatology | 91 |

**Figure 1.**

## Statements and Declarations

## References

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