AI in Healthcare: Myths vs. Facts?

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ENGL 1121-25

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November 30, 2023

When it comes to artificial intelligence in healthcare, do you immediately think of a sci-fi movie with sentient machines? We hear many things about AI in healthcare. For example, in sci-fi movies, we see a future where robots replace doctors, or AI misinterprets patient data leading to the world's end. AI skeptics may think integrating AI into healthcare has a very negative impact. Some individuals will lose their jobs because of these new technologies. It will also compromise the privacy of many patients. Even more alarming is the error-prone AI, the lack of transparency, and the lack of a doctor-patient relationship. Compared to our highly trained medical professionals, AI is very inaccurate. Additionally, the lack of transparency and doctor-patient relations leads to another layer of worry for patients. Although there is some truth to all of these genuine concerns, they are myths that led to common misconceptions about AI in the real world. The truth about implementing AI in healthcare is that they aren't replacements, dangerous, expensive, inaccessible, and too complex. As someone who is passionate about AI, this topic is important to me because AI can revolutionize the way we live; more specifically, it gives us a more efficient, accessible, and sustainable life.

If you are unfamiliar with AI in this landscape, then you are probably wondering what it means to implement AI in healthcare. In the article "The Potential for Artificial Intelligence in Healthcare" from *the National Library of Medicine,* Thomas Davenport (2019) argues that AI isn't just one piece, but rather a collection of tech. The top four forms of AI based on importance and most used are machine learning, natural language processing (NLP), physical robots, and robotic process automation. Firstly, the most common use of AI in healthcare is machine learning. This also has different forms. Precision medicine is the simplest form, where it trains on a large dataset and then predicts what treatment protocol is more likely to work based on various patient attributes. Another more complex form is deep learning, which is also a very

common application. Deep learning recognizes potentially cancerous lesions in radiology images that can't be seen by the human eye. Secondly, NLP tries to make sense of human language. Davenport (2019) states, "This includes speech recognition, text analysis, and translation. In healthcare, it is used to analyze clinical notes and patient interactions to create simple reports." Thirdly, there are physical robots that collaborate with humans. For example, surgical robots. At first, this might seem terrifying, but with common surgical procedures, using a robot can help significantly. Davenport (2019) adds, "They are able to improve the surgeon's ability to see, create minimally invasive incisions, stitch wounds, and important decisions are still made by the human surgeon." Lastly, robotic process automation performs simple digital tasks like updating patient records and billing.

The biggest misconception about implementing AI in healthcare is that it will lead to the loss of many jobs among healthcare professionals. Although it's true that jobs in different sectors will be automated, healthcare workers won't be replaced. Near the start of the article "Is AI a Threat or Benefit to Health Workers?" from the *National Library of Medicine,* Caroline O'Neill (2019) writes, "Will artificial intelligence (AI) also take jobs from frontline workers? The answer was a resounding 'No' from the five private-sector leaders on a panel during the recent 2017 Canadian Agency for Drugs and Technologies in Health Symposium." We see that Michael Monteith, the CEO of ThoughtWire, which is introducing smart machines into hospitals, doesn't think AI will take jobs from healthcare professionals. As Monteith said, AI is used as a tool to make us more successful instead of substituting professionals. Additionally, in the article "Is Artificial Intelligence Set to Take Over the Health Sector?" from *Health Management,* Brigette Hyacinth (2018) states, "The goal isn't to replace physicians or healthcare professionals, but give them better decision-making tools. AI should integrate with the human element of the healthcare

service rendered, and not replace it altogether. These developments will allow doctors to focus more on the human aspects of patient care, such as empathy." As both O'Neill (2019) and Hyacinth (2018) said, no matter how good AI gets, it can't compare to humans.

In addition, many believe that AI is new and that implementing it in healthcare will be very error-prone and dangerous. It's true that AI isn't perfect and still has room for improvement, but this doesn't mean it is dangerous. Most studies show that as long as AI is implemented correctly, it has positive outcomes. In the article "Role of Artificial Intelligence in Patient Safety Outcomes: Systematic Literature Review" from the *National Library of Medicine,* Christian Lovis (2020) ran a literature review to identify the integration of AI and report the patient safety outcomes. Lovis (2020) writes, "This systematic review indicates that AI-enabled decision support systems, when implemented correctly, can aid in enhancing patient safety by improving error detection, patient stratification, and drug management." Another more recent article that examines the applications of AI in healthcare and what impact they have is "Real-World Application, Challenges and Implication of Artificial Intelligence in Healthcare: An Essay" from the *National Library of Medicine,* Shiv Kumar Mudgal (2023) states, "Major hospitals use AI-based technology to enhance knowledge and skills of their healthcare professionals for patient diagnosis and treatment. AI systems have also been shown to improve the efficiency and management of hospitals´ nursing and managerial functions." Mudgal (2023) goes on to say that AI is rapidly evolving, and providers make plans and strategies to transform the service, improve their efficiency, and have an overall positive outcome.

Another major misconception many have after hearing about emerging tech like AI is that it will be too expensive for both providers and patients. The fact is, that AI is able to save costs and time. In the article "Economics of Artificial Intelligence in Healthcare: Diagnosis vs.

Treatment" from the *National Library of Medicine,* Narendra N. Khanna (2022) writes, "This novel study aims to evaluate AI technology in the context of healthcare costs, namely in the areas of diagnosis and treatment, and then compare it to the traditional or non-AI-based approaches. We defined the diagnosis and treatment architectures, investigated their characteristics, and categorized the roles that AI plays in the diagnostic and therapeutic paradigms. We experimented with various combinations of different assumptions by integrating AI and then comparing it against conventional costs." After finishing the study Khanna (2022) goes on to say that they were able to demonstrate that AI lowers healthcare costs when compared to today. More specifically, AI in treatment is more effective at cutting costs than AI in diagnosis. Using AI for treatment is able to save costs because it improves productivity, efficiency, and personalization. In the article "Emerging Tech, Like AI, is Poised to Make Healthcare More Accurate, Accessible and Sustainable" from the *World Economic Forum,* Saemoon Yoon (2023) states, "AI can be used to improve productivity and efficiency by automating tasks, such as diet recording. It can also innovate the user experience by providing personalized insights and solutions. For example, Nuvilab's AI technology can be used to analyze dietary habits and provide reports on the nutritional intake rate of each menu on personal mobile devices." Diet recording in healthcare is quite subjective and has a limited sample size, but this shows us an example of how AI can be used to be more objective and precise than humans.

An additional misconception many have is that AI in healthcare is inaccessible and too complex to implement. The truth is that AI is able to make healthcare simpler and more accessible than ever. In the article "AI is Creating a Complex Landscape for Healthcare Executives" from *Healthcare Finance,* Jeff Lagasse (2023) says, "The technology also has a potential role to play in increasing access to care, such as in the case of telehealth, which – with

an AI boost – can provide remote consultations and diagnoses, eliminating the need for patients to travel." Telehealth provides the patient with faster and easier care. "Telemedicine is described as a medical practitioner to diagnose and treat patients in a remote area. Using health apps for scheduled follow-up visits makes doctors and patients more effective and improves the probability of follow-up, reducing missing appointments and optimizing patient outcomes" (Haleem, 2021). Telehealth is able to make healthcare more effective, organized, and available. In the article "How AI Helps Physicians Improve Telehealth Patient Care in Real-Time" from *Telemedicine Program,* Paul Sun (2022) gives an example of a simple telehealth service including AI, stating, "Concierge, the AI chatbot by Welltok, can help increase resource efficiency, provide cost transparency, and direct customers to lower-cost alternatives. The AI chatbot has an accuracy rate of 98 percent and was found to save consumers time by over 60%." This shows how AI implementations, like Welltok, are simple and accessible.

From writing this essay, I have learned there are legitimate concerns about AI in healthcare, particularly regarding data privacy and ethical considerations. "AI in health has been successful but far too limited. The inability to trust what we don't fully understand" (Arenth, 2020). AI must be developed and implemented responsibly to safeguard patient information and maintain trust in the medical system. We also have to remember that AI is not meant to be a replacement, but a very valuable tool. As I conclude this essay, thinking back to the notion of sentient machines and dystopian movies, we now see that AI can act as a catalyst for positive change.

Authors Note: I don't feel like I made any major changes to this essay, but I made a lot of edits on top of the errors that you and some of my classmates pointed out. I'm quite satisfied with this

essay because it allowed me to learn and make improvements based on the feedback I received from essays and revisions in units one and two.

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