Should Artificial Intelligence be used in health care?

When people first think of artificial intelligence they usually think of modern products like Amazon Alexa or Siri. However, artificial intelligence isn’t just a device that will talk to you, it’s the ability of a computer to perform tasks commonly associated with intelligent beings, like humans. This can come in many different forms, especially in the healthcare field. One of the most common forms of AI is machine learning which uses a learning model to pull data and be able to sort, label, assign, etc. the data to a particular action you program. Since AI can not only have extraordinary economic impacts on healthcare but ethical impacts as well, it is common to see people in favor of artificial intelligence being used in healthcare. However, others view artificial intelligence as being too new with too many problems and therefore think artificial intelligence should not be used in health care. This now raises an important question: Should Artificial Intelligence be used in health care?

One argument made for Artificial Intelligence in health care comes from the ethical lens. Many studies and lots of research show that Artificial Intelligence (AI) can help find and predict health complications. A deep learning-based AI known as DLAD (Deep Learning Based Automatic detection) was made to detect abnormal cell growth in chest radiographs. This algorithm did better than 17 out of 18 doctors (Greenfield, 2019). A similar type of AI is known as a prediction model. According to Davenport and Kalakota (2019), Google is working with various health delivery networks to do exactly that, making a prediction model to help warn clinicians of high-risk conditions such as heart failure. This is not the only use case for prediction models as an AI known as LYNA (Lymph Node Assistant) was not only tested on two datasets but also predicted a sample as cancerous or not with 99% accuracy (Greenfield, 2019). Additionally, the sources used are not only relevant but are credible on the basis of where they come from, Greenfield being his article was published on the Harvard website, and is a Harvard Ph.D. student. Both strengthen the claims made.

Regardless of how great these findings are, there is also an argument to be made against artificial intelligence (AI) in health care, which is also from the ethical lens. Now, studies also show that AI isn’t ready yet and has too many problems. The first of which is regulation. Regulation of AI isn’t an easy task as the FDA has yet to come out with universal approval guidelines for AI (Greenfield, 2019). The way AI works raises some medically unethical problems. For example, statistic-based machine learning models, mainly because they usher in an era of evidence and probability-based medicine (Davenport and Kalakota, 2019). An example of this is an AI from IBM known as Watson has come under some fire for giving not only wrong but unsafe cancer treatment recommendations (Gerke et.al., 2020). The sources listed here are credible and relevant which increases the strength of the argument. However, the argument fails to explain the unsafe cancer treatments, which is a weakness because of their vagueness.

On the other hand, there is an argument to be made for artificial intelligence (AI) in health care because AI helps the medical field. For example, machine learning can help with complex patterns in diagnostic data. This diagnostic process has several machine learning technologies that are available to aid the process. Because of this, there is earlier detection of diseases; there is increased consistency with the analysis of medical data; and more people have access to healthcare, especially in underserved communities (United States Government Accountability Office, 2022). This machine learning tool can also get results faster while the results are still realistic. Faster results mean improved preventative steps, improved cost savings, and improved wait times for patients (Drexel University, 2021). Drexel University Information Science professor, Christopher C Yang (2021), Ph.D., explains the more AI advances, the more data is collected than traditional medical methods could ever think was possible to collect. One of the sources, the United States Government Accountability Office, is a government lead report which greatly increases the strength and validity of the argument. Not to mention, Drexel University is a well-known and respected university which increases the strength of the Argument as well.

However, there is another perspective to be said against AI being used with a medical lens. This is because artificial intelligence (AI) needs to be developed more to be adequately helpful. One example of this is surveying the AI. Since AI is still relatively early in development, it needs human surveillance, for example with a surgery robot since they operate logically instead of empathetically (Drexel University, 2021). This isn’t a problem with just surgeries and care but also more common medical problems like the economics of a patient. AI works logically so it can overlook economic limitations, so an AI may be able to point a patient to a particular care center based on diagnosis but might fail to account for economic restrictions (Drexel University, 2021). AI models are very complex and require not only information technology but also advanced medical knowledge. This raises issues with engineers since they need to be retrained to access and process medical system data. This is not ideal since it would disrupt the medical workflow and might even cause data leakage (Lushun Jiang et.al., 2021). It doesn’t stop there as doctors as well may not have much knowledge of AI in practice, causing efficiency reduction and errors (Lushun Jiang et.al, 2021). Today, AI is made up of software codes. These codes are hundreds if not thousands of lines long, which means engineers will inevitably make a mistake or two. However, a mistake is not something the medical field can afford as a mistake can directly threaten the well-being of patients (Lushun Jiang et.al, 2021). The article by Lushun Jiang and others was published in the National Library of Medicine which has lots of credibility. While this may strengthen the argument, the evidence put forth by Drexel University is not very specific.

On the other side, artificial intelligence (AI) in health care with an economic lens must be accounted for. This being artificial intelligence saves the health care system money. For instance, a 2018 Accenture analysis said using AI to automate administrative functions can save insurers an estimated $7 billion in 18 months (Hanover, 2021). This is a huge financial opportunity for healthcare insurers. Not only this but AI can be used to stop or prevent fraud. For example, CMS (Center for Medicare and Medicaid Services) built a fraud prevention AI system that used advanced analytics which detected fraud and saved $527 million in potential losses (Hanover, 2021). Another way to save people money is by introducing medicine in your own home. According to Terri Williams (2020), one way AI can save money is by assisting patients in the comfort of their homes. This can be a very effective system since patients will be saving both time and money. Drug development is another big cost in health care where AI can help save money. For instance, AI can lower the cost of drug development from $2.5 billion in 12 years to $1 billion in 7 years (Williams, 2020). Not only is this saving money, but it is reducing the time to develop drugs as well. One weakness of the argument is the author of one of the sources, Terri Williams, is not a professional in either the technology field or the healthcare field. However, the author of the other source uses reliable studies like Accenture which increases the strength of the argument.

Although, there are some claims to be made against artificial intelligence (AI) in healthcare because of the economics of it. One reason for this is AI costs a lot of money to develop in health care. To illustrate, according to analytics insights, a complete custom AI can cost up to $1 million (Luzniak, 2021). This is not a small amount to pay for an AI system that can come with many problems. Not to mention, AI requires specialist resources which can cost anywhere from $550 to $1,100 a day for AI development (Luzniak, 2021). This may not seem like a lot at first glance. However, that price is just for one healthcare specialist per day. Not to mention, these projects typically take multiple specialists and multiple years. Another example is when about $760 million was spent on AI in 2016 (The SSI group, 2022). This appears to only be a fraction of the whole market considering the current market (2022) is worth about $6.9 billion and is expected to grow to $67.4 billion by 2027 (Markets and Markets, 2022). One aspect is the evidence by Luzniak was on an article that was posted to a polish website, which makes it a global source and increases the strength of the article. The articles are also recent, which increases the strength of the argument as well. However, neither the SSI group nor Markets and Markets had authors listed for their articles which weakens the argument.

The various perspectives discussed have insight into whether or not artificial intelligence should be in health care. Starting with the for perspective, this perspective is very strong as it contains sources from various credible sources like Harvard, Drexel, the National Center for Biotechnology Information, and a study that was done by Google. Not to mention, both the for and against perspective has evidence from relevant sources, meaning they were put out in the last few years. The against perspective also has a global source. This makes both for and against perspectives fairly strong. However, the against perspective includes a couple of assumptions. For example, the against perspective that takes an ethical lens state “regulating AI in health care is a difficult task, as the FDA hasn’t come out with universal approval guidelines for AI”. This piece of evidence relies on the assumption that the FDA won’t come out with guidelines or regulations for artificial intelligence. The next perspective comes from the against perspective with a medical lens. This piece of evidence states “AI still needs human surveillance”. This relies on the assumption that this is an issue, as opposed to an opportunity to create more jobs. Both assumptions significantly weaken the argument that AI shouldn’t be used in health care. After consideration of the weaknesses and strengths of both perspectives, the argument artificial intelligence should be used in health care is the stronger argument and the best solution.

I started neutral on the topic because this was a new topic for me and hadn’t heard of artificial intelligence being used in health care. When I started researching, I was heavily focused on the ethics and economics aspects of it because I felt those were the most important lenses. This research led me to lean more for the use of AI in health care. Later in my research, I came across articles that focused on medical lenses and that skewed me to lean to be against AI in health care. This is mainly due to some of the problems AI faces in health care. However, after looking at the bigger picture, the downsides that AI has is mainly because it is a new technology and is not enough to outweigh all the benefits we can get from AI. In the end, I believe artificial intelligence should be used in health care.

There are a few things I would like to further research. The biggest thing I’d like to research is any advancements in the way they create the AI themselves. For example, organizing code better or finding an easier way to program them. Another is some regulations that are being developed. Regulations as with anything are very important. The last further piece of research I would like to see is more studies or real-world scenarios where AI is being put into place.