



TRANSFORMATION OF HEALTHCARE THROUGH ARTIFICIAL INTELLIGENCE- DELINQUENCY IN THE LEGAL FRAMEWORK

¹*Ms. Shivangi Sinha and ²Ms. Sweta Pandey

¹Assistant Professor, New Law College, BVDU, Pune.

²Student, New Law College, BVDU, Pune.

Article Received on 11/05/2020

Article Revised on 31/05/2020

Article Accepted on 21/06/2020

*Corresponding Author

Ms. Shivangi Sinha

Assistant Professor, New
Law College, BVDU, Pune

ABSTRACT

Artificial Intelligence as the name suggests is one such intellectual aspect which is created artificially i.e. not by natural means and they are programmed in such a way that they think like humans and try to

mimic their actions. Initially "AI" was one such concept which was not known by people at large, and there were only few sectors in which we can trace its inception. Gradually as we say, we progress with the society, other precinct, started using this technology as well. The thought process of a person conceptualizes itself on its own, "AI" in its concept was considered something related to technology, like machine language which cannot be interpreted or utilized by common masses. Furthermore, as the technological advancement took place "AI" started gaining its space in almost all sectors worldwide. In this article our focus will be stressed upon the use of this "human mimic" in the medical sector. We will try and show up how Artificial Intelligence is now globally used even in the medical sector, in what ways and forms. Also an effort has been made to throw light upon the pros and cons for the same. Since medical sectors can be considered as one of the most vulnerable forum which requires extreme sense of expertise (in their field) to stance here for long, so we will try to have a clear picture of working of "AI" both in Indian and Global perspective and will also try and analyze its continuity in this sector.

KEYWORDS: Artificial Intelligence, Medical Sectors, Technological Advancement, Legal Sector.

I. INTRODUCTION

Artificial Intelligence as the name denotes is the use of different technologies to stimulate human thinking capacity in machines. John Mc Carthy was the first person in the year 1956 to actually describe and define this concept.^[1] If we do a deeper analysis we can come across a very famous “Turning Test”, which was actually been formulated by Alan turning in the year 1950 which gives us a co relation between cognitive level of task analysis done between the human mind and the AI. There was a survey conducted in the year 2016 which stated that eventually the use of AI in the medical sector was actually a lot more than done in other sectors. The use of AI in the medical sector is basically been categorized into two vital parts i.e. in the virtual sector and the use of AI in the physical sector. Virtual sector basically emphasis on maintaining different types of health records and physical sectors are the use of robotic technology in performing actual medical activities. Even the traditional approach availed the use of technology but that had a limited approach up to Maintaining database, collection of statistical data’s etc.

On the contrary if we look into today’s scenario the technology has widen up its field and just from the algorithm and flowchart it has come about to present its views on the collected data. At present there are certain branches of medical science which utilizes technology at a larger scale such as radiology, certain orthopedic surgery performed, there are certain app designed which look after the drug doze algorithms etc. Therefore, these aspects give us a proper screening that how the society is developing with the pace of the time. However, as already mentioned there are illustrations where the AI creates some faulty situations for itself but every good aspects comes with a package of bad ones, in the same way use of artificial intelligence to cure a living being also needs lot of cross references, which we will elaborate and discuss in our later aspects. But for now, *prima facie* we can observe that the traditional approach of the fear of using technology has changed into a very comfort zone and a lot of AI is now been used right from reminding upon appointments, checking on drugs along with dozes to assisting in surgeries and many others. In order to maintain these techniques there is lot of developments taking place in the physical space as well. In order to main such Advanced equipment’s and technologies we require a high level of maintenance in the physical space too, which can be counted as one of the positive aspect.

II. AI in Healthcare

The first question which arises in our mind when we talk about the use of Artificial Intelligence in the healthcare domain is “why”? Why do we need AI in this sector? The answer to this question lies in the complexity of situation, technological advancement are always used to make the situation better and to have smooth implementations. As a matter of fact we all know that medical sector is one such domain which is increasing rapidly. If we try and focus at the present scenario the medical sector is standing with us and against the pandemic situation which we are facing today.

The use of AI in health sector turns out to be a potential transformation which we are getting today. There can be many instances which can be traced where AI can perform much better task than the humans. For instance, if we discuss the concept of radiology, the AI used in this field can eventually help in a better diagnosis of any kind of tumors present in a much expeditious way. The AI which is used in the health sector cannot be considered as any of the technology, but actually we can consider it as a mixture of technologies used. In co relation to this we can adhere the example of “neural network”,^[2] this is one of the technology which is actually used in the healthcare sector since decades, which is used in anticipating the health condition i.e. whether a person is likely to get effected by certain disease or not. The another technology which can be discussed on is deep learning,^[3] this is one of the technology used to perceive anything which cannot be seen from the naked human eye, popularly used in the image analysis related to oncology, which provides us with deeper analysis of the disease. Another very famous technology which can be mull over is the use of NLP i.e. natural language processing which actually helps in a very clear text analysis, translation of any language to another etc. These minuscule illustrations shows us that how AI has actually become a vital part in the ongoing process of this sector. Further, we will contemplate more of the technologies used and its accuracy both in the Indian as well as global perspective, to have a better understanding of the situations and resources.

1. Indian Perspective

India has always been one of those countries which always have room for discovery, innovations and startups. However, this fact cannot be ignored because of enormous population and lack of adequate facilities, India lacks in some of the domain which largely covers the healthcare sector. Though we have stepped into a technically advanced atmosphere yet, there are only handful numbers of examples which can be picked and stated. However at

the same time we also cannot ignore the fact about its utility. As it always rightly said AI when and if used properly can boil down your restrictions and constraints. There are always certain creative solutions when it comes to the problems faced here in India. Today we will look into certain illustrations which factually denote the use of AI in Indian health care sectors.

We can start our analysis from the root cause, if we get into an empirical study, it can be observed that the number of cases in India related to diabetics is at its maximum. There are numerous initiatives taken by our government to provide both cure and awareness among the people for the same. Some of them to be mentioned can be, NITI Aayog is working on this in collaboration with Microsoft and Forus Health to come up with a pilot project of “retinopathy”, which can help in the early detection of this disease.^[4] The next prominent illustration which can be discussed is in the field of cancer in which there are numerous scopes to be worked upon. One thing which needs to be looked around is early diagnosis and treatment of this disease, there we can enumerate the fact that AI can play a vital part in doing so. India faces Cancer cases every now and then, NITI Aayog once again in collaboration with other department by using AI are in the process to launch various projects on early detection and management of cancer treatments. Screening in one such important aspect, “Digital Pathology” is one such technology which now used in this comprehensive process. Another prime focus is on some chronic diseases which we also term as (COPD), i.e. Chronic obstructive pulmonary disease, WHO states that such disease occur because of many factors such as environmental issues, socio- economic factors etc. Chronic diseases include respiratory diseases, wheezing, coughing etc. Patients initially do not realize this fact but eventually it triggers. The medication for such disease generally comes with inhalers or some long term control medications. AI in this regard has come up with certain inhaler based solutions which not only cures the problems but also keeps a check on the ratio of cure, monitor the doze etc. Chronic diseases are most of the time lungs related, in order to identify the same we need high magnificent rays to diagnosis it. Such rays are used in CT Scans or X-rays with some advanced Computation Fluid Dynamics (CFD),^[5] which will eventually help both in the proper diagnosis and treatment of the lungs.

These discussions prove us that slowly and steadily, but AI is trying to capture the health sector in its own integral way which will eventually help us to combat many issues which we face technically.

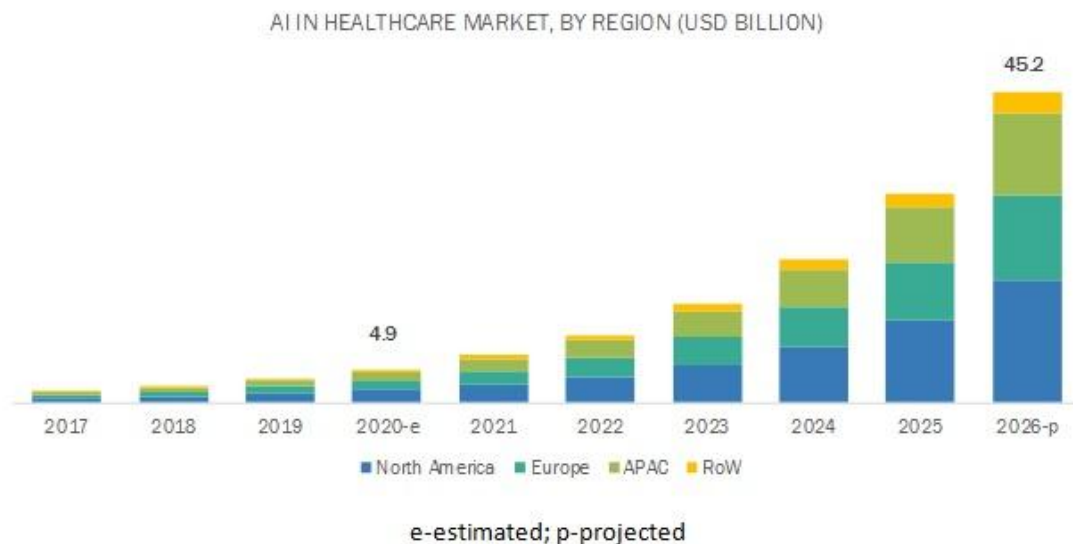
2. Global Perspective

The use and perspective of AI in the healthcare sector globally cannot be summarized in one simple form or formula, there are increasing number of cross mergers and numerous partnerships which is actually inculcating AI in every aspect of the its applications, for instances the surgeries done are these days under the assistance of Roberts, we have the use of AI in the diagnosis of patients, the treatments which are to be provided,deciding the dosage of the patients etc.

Although there is one thing which has the need to be discussed thoroughly when it comes to the use of AI in healthcare sector and the rate of accuracy which were to be achieved. There were cases recorded in US of Cyber Murder, which actually stated that a patient died because of high dose of insulin injected to him on the basis of the reading done by the machine while he was admitted in the hospital. There are various such cases reported henceforth, which primarily states that every coin have two sides. Eventually the use of AI also affected the global market at large as well in a positive way.

Such global perspectives can be seen through graphical representations with much more clarity.

If we see the region wise encroachment of AI globally, it can be concluded that there has been an active rise in most of the regions, specifically in context to AI in healthcare sector.^[6]



If we refer to the graph above, North America is shown to have the largest growth in the healthcare sector with respect to AI. Moreover, the projected growth is seen to be mounting in the near years.

III. Legal Background

Artificial Intelligence is the brainchild of the human intellect. The rapid growth in every sector is through key technological advancements. All of these developments are encumbered by the legal boundaries which provide a yardstick to measure liabilities arising out the fallacies committed through these developments. In a similar way, there has to be a legal setup which brings within its purview the liabilities of Artificial Intelligence and machines backed by artificial intelligence. If we delve into the concepts of jurisprudence, a fine distinction is to be made between right and wrong. To elucidate upon this fact, rights and wrongs are said to be inter-dependent to one other. The existence of either marks for the inclusion of another. If AI, is to be brought under the legal spotlight, several pertinent questions can be triggered, for say, Why shall the creator be liable?; If the creator is not liable, then who is?

Taking in consideration the health care sector, medical jurisprudence has made notable progress and so has the medical field. Artificial Intelligence has also crept in the field of medical sciences and a considerable development has been seen in this front.

In lieu of the current times which the entire world at large is facing, AI has made major contributions. We can take instances from a basic GPS system which aided in the development of an Application which would help detect people carrying the virus.

While there is much to appreciate about the contributions, on the contrary there are loopholes which make AI exposed to criticism.

As we move ahead, it is vital to explore the legal boundations created to curb the free operations of AI thereby deciding the liability.

1. Indian Perspective

Any sector void of a robust legal framework would be like a guard less prey. The predators pounce on such opportunities and create societal nuisance from which they benefit. Since there is no framework for protection, they devise ways to utilize these loopholes. At the outset, India through its technical transformations and adaptability has put its best foot

forward in the combat against Corona. It is due to a stable technical infrastructure, that we are able to cope up with our lives. The medical sector, through the backing of AI has been successful in alleviating the outbreak of the disease to some extent. An instance can be drawn wherein; OPD's are partially operating through the technical support. Recently, Apollo Hospitals, through the aid of AI created an application which would help in the self-diagnosis of the disease.

However, if we look at the darker side, there have been many instances where the Artificially Intelligent machine doesn't always delivers what it promises. The results have been erroneous and have caused humungous losses. Though the glitch might appear to be insignificant, but the damage surely can't be unheeded. Law is not always white and black there are certain grey areas where attention is to be devoted. A legal framework for AI is one such domain which lacks the scrutiny. The lack of flawless implementation of AI medical technology and a solid legal framework can only alleviate the crisis.

If the law of the land in this regard is to be evaluated, they would not suffice the multi-disciplinary impairment that is being caused. When we talk about the impairments, they are due to the discrepancy of laws. They are yet to be regulated. It is not that effort has not been made to bring a uniform framework to bring Artificial Intelligence under the purview of the legal scrutiny. In 2017, the Ministry of Commerce and Industry, established an "Artificial Intelligence Task Force" to brainstorm over the harnessing of AI to boost India's economic development in various sectors.^[7] In this establishment, there were several experts from backgrounds such as engineering, robotics, intellectual property, artificial intelligence etc. However there was no inclusion of a medico-legal expert who could help in the constitution of a robust legal framework to alleviate the problems arising out of amalgamation of healthcare and AI.

In order sustain this evolution accomplished, our policymakers shall imperatively adopt and frame legal norms which would help regulate the maneuvers of Artificial intelligence.

2. Global Perspectives

Most of the Indian legal framework is adopted or borrowed from other Nations; therefore it would be pertinent to give a glance at the global legislations made in regard to AI at large but more specifically upon AI's integration in healthcare. Another aspect which brings AI into actual action in healthcare was for segregation of the high volumes of data. Ai crept into the

system by mode of segregation and record keeping through sophisticated measures and turned out to develop with the data through deep learning processes and in the current day, suggests medications and dosages. There are various mundane questions which would arise if we look into the details of the functioning of AI and legislations governing it. Is there a distinction between the developing company of the AI mechanism and the AI itself? If, there is a difference, are the hospital personnel not responsible to take the final decision? If there is dependence, should the level of dependence be demarcated?.

There are end number of questions which would lead to another set of questions. All the inquisitiveness creates a void between the policy makers and the existing legal framework.

The UK is proposing to implement regulations under which the insurer will bear the primary liability in case of accidents, usually caused by autonomous vehicles. In the absence of legislation related to AI, redress for victims of loss as a result of AI failure. It is to be considered as a tort of negligence. As the law currently stands, users of AI systems are less likely to be at fault than the manufacturer. Whether a manufacturer is liable will depend on relevant industry standards of care and whether the specifications were appropriate in light of those standards. There can be further debate as to what and to what extent the programmer, designer, or expert providing knowledge to AI systems can be at fault. Contributory negligence may also be a factor.^[8]

Furthermore, the European Union has also given way to AI liability in its legislations. In the European Motor vehicle Act, there has been a demarcation of the liability of the developer of the software and the software. The developer would be held liable for the failure of a AI technology. This recognition of liability is also tortuous in nature owing to negligence.

A recently published article by NYU researchers argued that medical AI (such as IBM's Watson for Cancer Care) should receive special legal status for its current and future role in the medical decision-making process.^[9]

IV. Legal conundrum surrounding AI

After having articulated the facts in regard to AI in a Global as well as National perceptions, there can be numerous questions which can be arisen due to speculations which still exist in relation to Artificial Intelligence and their regulatory framework. These questions however, are yet to be discussed upon. Some of them might have been researched upon but mostly

questions do not have a strong backing for their research due to abstinence from a standard regulatory framework. Certain prospective questions have been thought upon and suggestive measures which could be provided for the same can be enumerated as:-

How do AI programs guarantee patient consent and confidentiality of sensitive medical data?
How to address liability distribution issues between AI system professional, hospital and developer, trainer and administrator in medical malpractice case?

With regard to the confidentiality of sensitive information of patients a nexus between the ethical medical practice and AI can be sought which would help in creating a unanimity and uphold confidential information being protected and secure. With consideration to liability of medical personnel and AI, it is pertinent to take note that AI is created by human intellect; it might act beyond human control on some occasions but what can be controlled is the decision making skills. Technologies mostly function on the basis of decision making. The decision making is to be done by the medical personnel, therefore complete reliance on AI would prove to be erroneous.

In the event of an AI diagnostic error, or data abuse or technical glitch, who will be responsible: the professional, the AI developer, the specific program engineer who designed it or the AI Robot (if the robot has given its 'intelligence' to make its decision used)?

In circumstances when there has been erroneous detection of diagnosis, or any fallacy by the automated machine which operates through AI, it is yet to be identified upon whom the liability shall be placed. There have been instances wherein the AI model has been dysfunctional, and has caused grievous fatalities the legal responsibilities in such cases were determined to be placed upon the program engineer. This was deduced from the application of the strict liability rule. The rationale behind applying strict liability can be construed keeping in view the liability of offenders in cases of environmental exploitation. The bases in both these cases have nearly the same implication due to no proper description of the term AI in any possible legislation. Even if we look upon the facts with a jurisprudential approach.

How to determine the medical operator's degree of responsibility if there is an incorrect diagnosis or treatment due to an error in the primary data feed or system AI problem?

For the purpose of determination, upon whom the accountability of incorrect diagnosis lies, there can be dual analogies which may work under the aforementioned circumstances. In

cases where there has been feeding of incorrect data; the person feeding the data must be held responsible through contributory negligence. On the contrary, when the fallacy is due to some technical glitch, the responsibility shall lie with the developer. There are innumerable questions which can be arisen in this regard, however, a dainty effort has been made to elucidate upon the prominent ones which could give in a perception about AI and the inconsistencies involved incorporating AI in our day to day errands.

V. CONCLUSION

The inclusion of AI was at the early stage only limited to organisational work but with the expansion of AI in every possible task has been skeptical. India has been proactive in adopting the AI technology in a timely manner and has made the combat with COVID-19 or any other deadly disease for that matter. Instead of fearing to adopt the integration of AI and healthcare, there shall be an attempt to formulate a better comprehensive Legal system.

An inclusive legal structure should be established to safeguard compliance so that the benefits of medical AI in the context of the Indian Health Service can be barred from the risk. It is high time the policymakers get together to formulate a structured legal provision inclusive of AI and Healthcare amalgamated together.

REFERENCES

1. Article on “Overview of AI in Medicines” by National Library of Medicines.
2. Sordo M. Introduction to Neural Networks in Healthcare, (Google Scholar), 2002.
3. Fakoor R, Ladhak, Nazr A, The 30th International Conference on Machine Learning, 2013. (Google Scholar).
4. Indian National Health Policy Scheme, 2013.
5. Global Initiative for Chronic Obstructive Lung Disease, 2014.
6. <https://www.marketsandmarkets.com/Market-Reports/artificial-intelligence-healthcare-market-54679303.html>.
7. Artificial Intelligence Task Force.
8. <https://cms.law/en/gbr/publication/artificial-intelligence-who-is-liable-when-ai-fails-to-perform>.
9. Hey Watson, Can I Sue You for Malpractice? Asia-Pacific Journal of Health Law, Policy and Ethics, SSRN November 28, 2017.