Digital society and AI, with special reference to healthcare

The article aims to highlight the ethical and regulatory impact arising from the progress of digital society and AI, with special regard to the right to healthcare as a social human right. Digital society and AI are intricately related to healthcare and digital health literacy. Although the legal norms that guide digital society are needed to maintain the rule of law, humanity's future will be marked by regulatory minimalism. New forms of regulation should therefore be developed that can effectively prevent illegal and immoral activity in digital society. Codes of conduct on AI use in healthcare should also be strengthened. Present-day AI ethics inhibits dehumanization and promotes the cause of digital healthcare, which is imperative for an adequately functioning digital society. Nevertheless, mis- and disinforming patients via social media platforms poses a real threat. Even though the number of digitally illiterate patients is shrinking, no patient should be ostracized, for such would run counter to the digitalization of society. Last, digital sovereignty has been eroded somewhat because states are barely able to ensure online security for their citizens.

Keywords: *digital society, AI, healthcare, digital health literacy, regulatory minimalism, digital sovereignty*

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1. Introduction

In Central and Eastern Europe, the COVID-19 pandemic produced approximately 12 million new users of online services, and in the first half of 2020, the digital economy almost doubled (Piotrowska et al. 2024, 300). Those trends suggest that in times of economic and/or healthcare crises, a multitude of individuals previously lagging behind usually fall in line with the majority. Sociopsychological phenomena that trigger such developments during wartime, pandemics, and other globally transformative events have been detected in human history since long before the digital age. Because such sociopsychological drivers make people with health problems struggle more than the general population, social capital thus grows in efficacy and scale. As an antidote, the promotion of digital health literacy, as a *sine qua non* of telemedicine, boosts the defense against contamination, as the case of SARS–CoV-2 showed (Julesz 2020, 2024). Meanwhile, the outcomes of telemedicine's development during the COVID-19 pandemic have been maintained both at the global and national levels (Julesz 2022, 2023). All that serves the progress of healthcare and, resultantly, the evolution of social human rights.

The propagation of digital health literacy has been one of the most important favorable outcomes of the COVID-19 pandemic. Even though the plague in the Middle Ages and the Spanish flu in 1918–1920 caused mass death, they also contributed to human civilization. The existential need induced by the recent pandemic resulted in the birth of new telemedical technology, and in turn, digital health literacy found its way to the vast majority of citizens. In time, the role of print media in patients' health education will fade away, but the Internet will remain.

Historical turns are usually tied to catastrophic events, including pandemics. The first global stimulus to the cultural and digital progress of humanity in the 21st century happened to be the COVID-19 pandemic. To be sure, it will not be the final humanitarian crisis of the century. We can count on more. Historical memory retains methods learned about how to overcome crises and turn them to humanity's collective advantage. Digital expansion is humanity's natural answer to one of the deadliest pandemics in human history and, among its advantages, has led to digital citizenship in Hungary along with quite a few other countries.

2. Methods

The article is a review of recent literature retrieved from the Web of Science. The criteria in selecting articles were currency and relevance to digital society, digital healthcare, health mis- and disinformation, digital health literacy, and AI in healthcare and health education. The articles ultimately chosen were selected according to criticisms pro and con equally. Conclusions were drawn from the results of the articles contrasted with the personal beliefs of the author(s).

3. The need for digital society without health mis- and disinformation

Zhao et al. (2024, 9) are convinced that "healthcare providers should consider providing training programs tailored to specific sociodemographic factors to improve the ability that find and use accurate information online." Although some authors have argued that patient influencers on social media platforms "help other patients learn about disease self-management and improve their quality of life" (Willis et al. 2023, 1), others have stressed that "if those patient influencers are not qualified health professionals themselves, there is no guarantee that the complex information they are communicating has been accurately interpreted, posing a risk of misinformation spread" (Merga 2024, 490). Hussna et al. (2024, 1) contend that "throughout the COVID-19 pandemic, there was a substantial surge in the dissemination of inaccurate or deceptive information via social media platforms, particularly X (formerly known as Twitter)." I side with Azahra, Pirdaus, and Prabowo (2024, 19) in asserting that digital literacy is "very important in dealing with the spread of hoaxes and false information on social media and digital platforms." I also share the view of Falyuna et al. (2024, 69) that mis- and disinformation are caused by changes in the way that information flows and in shifts in who holds information power, as well as the fact that the world is entering a "post-truth era," among other causes. I additionally agree with Rodrigues et al. (2024, 3), who maintain that "health-related misinformation on SMPs [social media platforms] can be exploited to promote specific political narratives, exacerbating partisan disagreement amid uncertainty about information reliability." In my opinion, public health-related information is instrumental in shaping citizens' political thinking and, in turn, exerts influence on both the state and digital society. Arguably, health-related misinformation needs to be addressed to avoid political and social biases. The elimination of health-related misinformation is a question of national law and social cohesion, both of which need to support fair policy and just societies.

Török (2024, 125) suggests that state intervention against disinformation should not take the form of restrictive measures; instead, information literacy ought to be promoted. That idea notwithstanding, Hua and Shaw (2020, 10) stress the "Chinese Supreme Court's directives on fake news" and other "strict data management measures" during the COVID-19 pandemic. Nevertheless, an infodemic ran rampant throughout the world during the pandemic, including in Germany (Renninger et al. 2025, 293) and China (Hua and Shaw 2020). On the one hand, top-down measures are acceptable if they are limited to taking control of a humanitarian emergency, provided that the rule of law is fully respected. On the other, it is generally preferable to disseminate information literacy. State cooperation with society is essential; however, that relationship also shows tremendous variety between different countries with different cultures. A patient-focused dissemination of information literacy should be a common goal in all countries, and ultimately, the relevance of health-related information and that of legal information are indeed comparable. After all, patients are also citizens who avail themselves of all sorts of information.

Zhang and Liu (2023, 8–9) highlight that "social networks make it much easier for many people, particularly non-Internet users, to acquire high-quality health

information." Indeed, the credibility of health information is highly relevant. When a proxy seeks health information online on a patient's behalf, the patient might be exposed to the threat of negligently conveyed information that is hazardous to their health. Nevertheless, I agree with Bober et al. (2024, 6), who argue that "patients with limited technology experience are often able to complete a telehealth visit with the help of a family member, friend or caregiver."

Arguably, social trust is strongly tied to institutional trust. Digitally illiterate patients only exhibit social trust if they also exhibit institutional trust. Digital illiteracy marginalizes individual without access to the Internet and/or ones who have not been acculturated to the legal and cultural norms of digital society. With time, that social stratum will narrow and ultimately vanish. However, no society should leave that already marginalized stratum on the sidelines. Even if they will ontologically disappear, such behavior would dehumanize digital society and run counter to the essential characteristics of a society based on information and communication technology (ICT). After all, ICT is designed for humanity's benefit; it is ICT that serves humankind, not the other way around.

4. Pros and cons of AI with special regard to healthcare and health education

Even if the greatest threat posed by digital society is the possible factor of dehumanization, emerging novelties, including digital patient twins, indisputably serve human beings (Katsoulakis 2024). Digital twins have recently appeared in healthcare to safeguard health and reduce costs for both patients and providers. A digital simulation of the patient is the best way to protect a human being by testing healthcare solutions and methods on their digital twin. Far from dehumanizing patients, digital twins are subordinated to patients' best interests. As human beings, patients should always be paramount; thus, a patient's digital copy needs to have the biological characteristics of that patient, although the first aim is to serve the patient as a living person. Moreover, the patient needs to be informed of the threats and opportunities of having a digital twin, and the patient's informed consent is required even if it necessitates a certain level of digital health literacy. However, that criterion may lead to the social exclusion of patients with insufficient digital health literacy.

At any rate, patient-based digital healthcare is supposed to be largely inclusive. Digitally illiterate patients ought to be offered all necessary human- and ICT-based help to remain part of digital society. Lazic, Simovic, and Domazet (2024, 1623) maintain that "citizens who lack digital skills and competences have limited access to knowledge acquisition and tend to be among those of lower socioeconomic status." Zervas et al. (2024, 1), in examining the use of digital currencies, observe that "digital skills effectively contribute to the development of digital societies." I believe that both digital healthcare and transactions performed with digital currency stress the significance of digital literacy in contemporary societies. Digital society's several facets also demonstrate the relevance of digital literacy and confirm the disintegrating consequences of the lack thereof.

GPT 4.0, a "generative pre-trained transformer," makes it possible for healthcare students (e.g., future physicians and nurses) to practice on AI without endangering living patients. For example, students become competent in establishing healthcare documentation. Because today's healthcare students have been socialized in a digital world, it is more effective for them to polish their skills on nonliving AI and to later use their experience to treat living patients in real life. GPT 4.0 was launched in 2024, and similar new technology is in development. Such technology safeguards human health and life while at once promoting health education (Horváthné Kónya et al. 2024). According to Cholyshkina et al. (2024, 40), "The use of ChatGPT-like applications can reduce the spread of cheating in education, which involves writing assignments for money." GPT 4.0 and similar technology likewise serve to draw in university lecturers who are digital immigrants, and their inclusion is based on student–lecturer cooperation. Indeed, it is not enough to involve students in digital healthcare education; engaging older lecturers is also important to build a digital society with digital healthcare. Ultimately, the gap between Gen Z students and older lecturers should be bridged; otherwise, it might pose the risk of social incongruence, which is detrimental to both health education and patient safety. While the generation gap has always presented a risk, the cultural differences between digital natives and immigrants are particularly salient in health education and healthcare services today.

Sallam (2023, 17) maintains that ChatGPT, similar to other large language models, has "the potential to expedite innovation in health care and can aid in promoting equity and diversity in research by overcoming language barriers." Basaran and Duman (2024, 1499), meanwhile, draw attention to the significance of "digital literacy, language barriers and the availability of reliable Internet connectivity" with respect to ChatGPT. At the same time, Singh, Arora, and Singh (2024, 6) posit that some problems with ChatGPT emerge in the area of medical ethics, "including how data is interpreted, who is responsible and other private issues." Masood et al. (2025, 4908) note ethical and legal problems, including "privacy, data security and informed consent requirements," among others. ChatGPT is appropriate to inform both communities and individuals about public health topics, including vaccination, environmental health, and reducing the risks of chronic diseases. However, Biswas (2023, 869) contends that "the use of ChatGPT in public health should be carefully considered and implemented with caution." I side with Héder (2020, 71) in arguing that the potential and complexity of AI and the aim to regulate it lead to "technological enlightenment." In the words of Nechesov, Dorokhov, and Ruponen (2025, 13896–97):

> Developing an ethical framework that is not exclusively human-centered, but instead considers the interests of all beings capable of reassessing their primary goals and actions, whether artificial or natural, is essential to prevent conflicts between different forms of intelligence.

Even if AI unequivocally gives rise to ethical ambiguities, its advantages are overwhelming. To be sure, AI ethics and healthcare ethics go hand in hand, and healthcare workers should observe patient rights above all. In the end, it is only acceptable

to employ AI in healthcare if it infringes neither patient rights nor medical ethics. Smola et al. (2025, 13) found that the use of AI in healthcare in Polish society was often marked by a deficit in empathy and emotional intelligence. Meanwhile, in Croatia, Cartolovni, Malesevic, and Poslon (2023, 1) additionally argue that, when using AI, the existing values of the doctor–patient relationship, "such as trust and honesty, conveyed through open and sincere communication," should be upheld.

Using AI does not necessarily dehumanize digital society. In fact, digital society is instrumental in including an increasing number of citizens (e.g., patients and healthcare workers) into a community based on digital health literacy and personal qualities, including integrity, reliability, teamwork, and the capacity for transboundary cooperation. It should also be considered that regulating digital society usually follows technical development. Ultimately, it is not the law that determines digital society but digital society that gives a boost to legal development. That dynamic is salient in Regulation (EU) 2024/1689 of the European Parliament and of the Council on AI in its prohibition of the following practices that pose an unacceptable risk:

- Harmful AI-based manipulation and deception;
- Harmful AI-based exploitation of vulnerabilities;
- Social scoring;
- Individual criminal offense risk assessment or prediction;
- Untargeted scraping of the Internet or CCTV material to create or expand facial recognition databases;
- Emotion recognition in workplaces and institutions of education;
- Biometric categorization to deduce certain protected characteristics; and
- Real-time remote biometric identification for law enforcement purposes in publicly accessible spaces (European Commission 2024).

Beyond those unacceptable risks, there are cases of using AI that display high risk—for instance, "AI safety components in critical infrastructures (e.g., transport), the failure of which could put the life and health of citizens at risk" (European Commission 2024). Theoreticians need to bear in mind that said EU regulation is fresh and makes an attempt to allay social fears of AI. It is a legal device to bring AI-related laws in various EU member states into compliance, not a panacea to all possible problems exhibited by current and future AI use. In all, the European Union's AI Act exerts an extraterritorial effect because it is also legally binding for organizations in non-EU countries that process EU citizens' data. The EU AI Act will hopefully prompt other legislatures (e.g., the U.S. Congress) to adopt similar laws. It will certainly be followed by other AI regulations adapting the EU law to the progress of AI. At any rate, legal pluralism in AI law has to be avoided.

Indeed, the use of AI in healthcare, health education, and other areas is difficult to regulate, for current legal tools are not sufficient for that purpose. In a digital society, obsolete rules should give way to new kinds of norms that can cover more areas of possible AI use. Furthermore, codes of conduct on AI use should be encouraged in healthcare facilities and institutions of health education. New norms could be derived from already existing ones, including ethical norms reinforced with compensatory damages that can more effectively prevent AI users from violating those norms.

5. Digital health literacy as a precondition for digital society

Digital health literacy is arguably promoted through digitalization's educational role in healthcare. I find that educational function to be as important as the advancement of digital health infrastructure. Citizens speaking and understanding the same technical language form a community with similar legal, social, economic, and ethical norms. Clearly, social cohesion is largely based on people at much the same cultural level. While digital health literacy is a key component of society's cultural foundation, value pluralism also has to be maintained. Technical consistency does not rule out the parallel existence of various value systems within the same community. Although technological justice is a precondition for social justice, value pluralism is a prerequisite for it as well. Ultimately, technological justice and value pluralism are both necessary to foster fair and just digital societies.

A binary perception of digital health literacy results in some patients totally refusing digital healthcare, whereas digitally literate patients enjoy its advantages. To a certain extent, negative thinking about digital healthcare may be surmounted through supportive intervention by the state. Without the state's involvement, however, ostracized patients might hamper the progress of digitalization in society. As long as a large number of patients are ill-equipped to benefit from digital healthcare, they will feel that it is their natural right, if not obligation, to resist digital citizenship and the mandatory use of digital healthcare services.

The preamble to the constitution of the World Health Organization states, "The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States." The preamble also declares that "unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger." States Parties to the International Covenant on Economic, Social and Cultural Rights "recognize the benefits to be derived from the encouragement and development of international contacts and co-operation in the scientific and cultural fields" [Article 15(4)]. Without a doubt, the human right to know, in a broader sense, is largely based on sharing knowledge and expertise among nations. Digital health literacy should thus likewise be extended to nations with less wealth.

Observing human rights necessarily promotes not only the rule of law but also the social functioning of a digital society. That concomitant dual effect helps spread digital health literacy. According to Article Q(3) of the Fundamental Law of Hungary, international human rights treaties and universal instruments are incorporated into the Hungarian legal system through promulgation in national laws. However, the generally recognized rules of international law form an integral part of the legal system without promulgation. Not only international human rights but also national legal norms and other sources of law and ethics are what encourage digital health literacy.

Digital health literacy is a precondition for a digital society, with several factors determining the functioning of such a society. Digital health literacy suggests a social understanding of the healthcare system. In fact, there is no digital healthcare without digital health literacy, and there is no digital society without digital healthcare.

Furthermore, the enlargement of digital healthcare and digital society is a legal imperative in all countries. Citizens should be allowed ample time to change; indeed, patients in particular often struggle with making the shift, with the factor of age being only one of the determinants of that sociodemographic phenomenon.

6. Characteristics of digital society

According to the constitution of the World Health Organization, "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." In today's societies, it is vital to overcome diseases and infirmities, though such successes alone are not sufficient to the task. Social well-being is as essential as physical and mental health. Digital healthcare, in a manner of speaking, results from technological pragmatism. Young people today, active in the job market, are digitally socialized to be driven by results. That common trait encourages societies to become ever more digital. With the physical expansion of societies and a growing number of healthcare facilities specialized in various areas of medicine making efforts to find the best treatment method for the same patient, digitalization is becoming inevitable. It is not only the infrastructure in societies that becomes digitalized, for digitalization also permeates the mindset of citizens and the way in which societies function.

Contemporary societies are characterized by a high level of digital connectivity. In a broader sense, all societies have already become digital to some degree. It is not solely the level of digitalization that makes a society digital, however. From the perspective of economic well-being, societies with less wealth are wrongly excluded from the community representing digital society. That said, digital connectivity is constantly developing all over the world and, in the long run, will reach societies in developing countries as well. Where, as a result of social well-being, digital society comes into existence, social welfare usually surges concomitantly.

At present, digital sovereignty has undoubtedly grown in importance, and legally binding norms attempt to channel it. However, digital sovereignty had proactively existed before relevant laws were put into effect. Indeed, such sovereignty is interconnected with the phenomenon of digital society. I side with Couture, Toupin, and Baños (2024, 742) in arguing that individuals should "build their own digital sovereignty" because states cannot keep pace with tech companies and thus cannot offer complete online security for their citizens. Even though digital sovereignty should be upheld in any digital society, regulating it might not yield comprehensive protection.

Digital society is partly self-regulated and partly subject to the law. Self-regulation forms the foundation of digital society because the more freedom a society enjoys, the less regulatory rigor will erode social capital. When a society becomes a digital one, there is no more need for a large number of meticulously elaborated laws. Even so, the basic legal framework of democracy requires regulations to preserve the rule of law, among other means. Digital constitutionalism is meant to protect that basic legal framework of civil and political rights, as well as economic, social, and cultural

rights, among others. According to Suzor (2018, 4), "The key challenge of digital constitutionalism is to identify how values of good governance can be protected in the digital age." By and large, lawmaking relies on social actors, who are able to give rise to a viable, digitally sustainable society. As a consequence, regulatory minimalism is also an essential requirement in any digital society.

Digital society exists both in theory and practice. Normally, theoretical reasoning furnishes practice with social norms to follow. In many situations, citizens may elude the law but nevertheless abide by broadly accepted social norms. Practical norms underlie digital society. To bring about a digital society, citizens need to be supplied with digital skills and tools. Notwithstanding the lack of those tools, a digital society's substructures may be devised in theory and later be put into reality. As a consequence, social norms will be tailored to practical norms.

From the perspective of digital society, the decriminalization of acts against the secure use of health information systems should be taken into consideration, for criminal sanctions do not in fact deter perpetrators. White-collar criminality tied to information systems cannot be restrained by depriving people of their liberty or with other typically criminal sanctions. Protecting victims is always more effective than imprisonment, as mediation has shown. Payment to the state instead of directly to victims is also less preventive. Such white-collar criminality runs counter to morality and other people's material interests, not to bodily integrity. Indeed, even in its modern form, criminal law neither protects nor corrupts digital society. Considering all the above, I see two solutions:

1. Eliminating criminal liability from the digital world; and
2. Introducing reforms in criminal law tied to information systems, especially by devising new sanctions—for instance, divulging the perpetrator's name and identity, which could be preventive in the marketplace.

The reception or rejection of the rules that govern digital society naturally sparks debates between social groups. Debates usually generate various and equally important answers to questions arising from disparate conceptions of digital society. Nevertheless, if a mirror-image perception of digital society can be transcended, then it will largely promote the development of such a society. The opposition between parties in favor and those against may lead to a social divide that could prove to be socially detrimental. However, respect for natural law advances social actors' capacity to comply with positive law and the rules of morality at the same time. Cooperation between social actors who represent different opinions on digital society is important as well. While we witness incongruence in current understandings of today's new world based on digital society, a multitude of converging arguments are setting the course for digital development. As a result, a diversity of human thinking can be expected to expedite digitalization and social development, not obstruct them.

7. Conclusion

In digitally advanced countries, bringing digital society into existence is a basic aspiration. Patients should receive the highest attainable level of healthcare, as is their

human right. That standard is largely contingent on the digital literacy of patients and on the expectation of proxy decision-makers for valid health information from both healthcare professionals and social media influencers. Today, social media platforms disseminate health information that often originates from dubious sources. Surmounting health mis- and disinformation is thus a prerequisite for digital society. In that regard, institutional trust is a necessary condition for social trust.

AI ethics is closely tied to healthcare ethics. Indeed, neither digital society nor advanced healthcare is possible without AI. In that relationship, it should be understood that AI does not dehumanize society. On the contrary, AI helps citizens become integrated into digital society and at once preserves human rights. Regulating AI in healthcare is nevertheless complicated. Whereas old-fashioned laws are clearly inadequate, codes of conduct and other ethical norms with new kinds of sanctions could be the first step toward developing more appropriate norms. In a well-constructed digital society, regulatory minimalism supports social functioning. However, maintaining the basic values of good governance—for example, ensuring well-being—is pivotal. Regarding digital sovereignty, citizens sometimes feel abandoned by the state; as a result, digital sovereignty ought to be reinforced. Meanwhile, the role of criminal law in protecting health information systems should be reassessed, for it can either be substituted or amended by more effective legal and extralegal measures—for example, disclosing an illegal or immoral use of information systems.

In Hungary, legally speaking, not all digital patients are digital citizens, at least not yet. Digital citizenship can put Hungarian society on the road to becoming digital. If digital society is the future of humankind, then the European Union's AI Act merely marks the beginning, with the short-term goal of providing EU citizens with the comfort of legal protection. Today, however, the eradication of unacceptable AI risks is more a general objective of the law than a palpable reality.

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