

Research Brief – February 2023



Ubuntu Ethics in AI for Healthcare: Enabling Equitable Care

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AI ethics in healthcare is largely shaped by Western ethical principles such as Kantianism. In this research brief, we highlight the African moral theory of Ubuntu as an alternative to ground ethical principles in AI for healthcare. Ubuntu can play an essential role in guiding the design, deployment and use of trustworthy AI systems in healthcare that works for everyone. Therefore, upholding the fundamental human right to fair and accessible healthcare.

Globally, COVID-19 has uncovered cracks in healthcare systems, and these vulnerabilities have been shown to have implications for health and social cohesion (WHO, 2021). Three years into the pandemic, many healthcare systems are still struggling to recover from the disruptions caused by COVID-19, especially care for chronic conditions such as cancer, cardiovascular diseases and diabetes. Artificial intelligence (AI) has the potential to revolutionize the healthcare sector, improving the efficiency and effectiveness of healthcare systems. In addition, AI tools can be applied to clinical data in order to personalize care for every patient, reduce risks of exposure to infectious diseases and increase access to quality and affordable healthcare in rural underserved communities. These innovations are particularly valuable in Africa and the Global South.

However, a robust body of knowledge from algorithmic injustice has shown that AI has the potential to amplify existing socioeconomic, racial and cultural prejudices that are part of our social fabric. For instance, an audit study revealed fairness gaps in state-of-the-art (SOTA) deep neural classifiers used for chest X-ray classifiers, particularly in terms of race and gender bias (Seyyed-Kalantari *et al.*, 2020). Another study highlighted unexplained disparities in pain in the treatment of diseases such as osteoarthritis (Pierson *et al.*, 2021). Obermeyer *et al.* (2019) showed that commercial algorithms used to identify patients with complex needs exhibit significant racial bias. The aforementioned inequalities in healthcare mirror historical socio-economic disparities and are a result of implicit and explicit social stereotypes (Adler, Glymour, and Fielding, 2016; Wiens, Creary, and Sjoding, 2022).

As a result of growing ethical concerns, there has been an increase in calls by researchers and institutions to develop ethical principles and guidelines to guide the development of inclusive AI tools for healthcare. As we have witnessed in the recent COVID-19 pandemic, there is often tension between protecting individual rights and achieving public health goals when health crises emerge (Kitchin, 2020). On the one hand, in these situations, there is a need to protect the population from the spread of the virus in order to save lives. On the other hand, governments and communities need to respect individual rights and freedoms, such as the right to privacy and the right to free movement. Balancing these competing interests is a complex task that requires an interdisciplinary approach and careful

consideration of the ethical implications of different actions and policies.

Existing ethical principles are developed in the Western world and predominantly encompass Western epistemology (Goffi, 2023). Western ethical principles are individualistic, focusing on the rights and interests of individual people rather than the collective well-being of society (Spahn, 2018). In contrast, African and Confucian theories emphasize interconnectedness between people. There are growing calls to decolonize data science and consider relational ethics in AI. In the context of bioethics, Confucian bioethics emphasizes the importance of virtue, duty and respect (Fan, 1999). Whereas African theories emphasize the importance of community, respect for others and interconnectedness of living things (Metz, 2010a). Both Confucian and African theories place a strong emphasis on community and the responsibility of individuals towards others.

Healthcare is inherently a matter that affects the community as a whole. In this brief, I posit that the African moral theory of Ubuntu is the way forward to creating inclusive and ethical AI solutions in healthcare. Moreover, we outline how the Ubuntu philosophy can be practically applied to uphold fairness, respect for others and trust in AI solutions for healthcare. Finally, I argue that Ubuntu moral theory can play an essential role in guiding the design, deployment and use of trustworthy AI systems in healthcare that works for everyone. Therefore, upholding the human right to equitable healthcare.

AI Ethics in Healthcare

Ethics in AI has been a topic of concern since the early 1960s, when the moral and technical consequences of automation were first highlighted (Samuel, 1960; Wiener, 1960). With advancements in computation and access to large datasets, AI applications have increased in society, and these applications present new risks and opportunities. In healthcare, the potential risks are higher because AI decisions can have serious consequences on patients (Ahmad, Eckert, and Teredesai, 2018). Therefore, it is crucial to thoroughly evaluate AI algorithms for safety, fairness and efficacy before using them in clinical settings to avoid potential harm to patients and the community.

The healthcare sector is not a new application area for ethics. On the contrary, it is one of the most strictly regulated sectors. Medical ethics has governed the sector over the years, providing a framework for moral judgment and decision-making (Beauchamp and Childress, 2013). The medical ethical principles most often used include (1) Autonomy, (2) Beneficence, (3) Non-Maleficence, and (4) Justice. However, bioethics is heavily influenced by Western theories such as Kantianism. Kantianism holds that the moral worth of an action is determined by the intent or motive behind it, as opposed to its consequences. This can lead to decisions that are rigid or rule-based and decisions that do not account for the lived experiences and particular circumstances of patients and communities.

It is worth noting that numerous ethical principles and guidelines that have been developed in recent years. The AI4People recommendations, which are seen as a point of reference for AI ethical principles in the West, are predominantly adapted from bioethical principles. Floridi et al. (2018) argue that bioethics principles are still relevant and can be adapted to deal with challenges posed by AI applications in healthcare. Therefore, the AI4People’s recommended ethical principles are (1) Autonomy, (2) Beneficence, (3) Non-Maleficence, (4) Justice, and (5) Explicability. Essentially adding the key concepts of transparency and explainability to the commonly used bioethics principle used in healthcare.

The AI4people framework is a good starting point for AI ethical principles in general. However, the framework does not cover all ethical issues related to AI in healthcare specifically. While several researchers have proposed AI ethical frameworks specifically for healthcare solutions (Chen *et al.*, 2021; Loftus *et al.*, 2022; Solanki, Grundy and Hussain, 2022), these frameworks lack consensus.

Western ethical theories often prioritize the rational and logical over the emotional and intuitive, which can lead to ethical decisions that are overly abstract and disconnected from the lived experiences of people.

The World Health Organization (WHO) released a consensus guidance report, based on 20 experts’ opinions, outlining six principles for the ethical use of AI in healthcare (WHO, 2021, see Figure 1). The WHO’s six consensus principles are useful, but they also lack emphasis on the value of community. We, however, would argue that communal values are *essential* to ensuring that AI systems help clinicians to provide respectful and beneficial care for all patients.



Figure 1. Ethical principles in the WHO guidance document.

The aforementioned ethical frameworks have been developed in the Western world, based on Western ethical epistemology. Western ethical theories often prioritize the rational and logical over the emotional and intuitive, which can lead to ethical decisions that are overly abstract and disconnected from the lived experiences of people. Finally, Western ethical theories often lack cultural and historical diversity, and may not be applicable or relevant to people and communities outside of the Western world. Thus, this research brief suggests the African relational theories associated with Ubuntu ethics present attractive values that will promote “abantu/botho/omuntu”, i.e. the upholding of the inherent dignity in each person and realizing of the human right to health for every person.

What is Ubuntu - Examples from the Healthcare Sector

Ubuntu, also commonly known as African humanism, is an African way of life. Ubuntu conceptualizes humanness as inseparably linked to other people, or in the Nguni proverb “Umuntu ngamuntu ngabantu” or Oshindonga equivalence of “Omuntu omuntu omolwa aantu”, this is can be loosely translated as “a person is a person because of other people” (Gade, 2012). This conceptualization grounds a set of normative beliefs about personhood, social justice and fairness that inform African practices to encompass certain values, such as reciprocity, the value of human life, peaceful relations, tolerance, mutual respect and consensus (Ujomudike, 2015). This does not mean that there is no individualism in Africa but rather suggests that Ubuntu plays an important role, emphasizing a relational way of life and shaping how decisions are made.

A quick online search for the word "Ubuntu" will reveal information about a Linux operating system that has been in existence since 2004. This has overtaken the traditional meaning of the word, which has been used for centuries in sub-Saharan Africa. Beyond the technology slogans, Ubuntu can play an essential role in grounding ethical principles such as justice, solidarity and fairness. A crucial aspect of this is the need to move away from valuing rationality as the most significant aspect and instead prioritize relationality (Birhane, 2021).

Previously, the Ubuntu philosophy has been proposed for interventions in healthcare to deal with moral problems in traditional bone-healing (Ewuoso, Fayemi, and Aramesh, 2021), managing pandemics (Sambala, Cooper, and Manderson, 2020) and addressing the COVID-19 pandemic (Chigangaidze, Matanga and Katsuro, 2022). Initially, Western researchers predicted that Africa would be the most affected region by COVID-19, with cases and deaths overwhelming healthcare systems (Pearson *et al.*, 2020). However, three years into the pandemic, Africa has turned out to be one of the least affected regions in terms of COVID-19 cases and deaths. Different hypotheses have been suggested to explain why Africa was one of the least affected regions by COVID-19, such as a youthful population (Diop *et al.*, 2020), limited interaction with travelers (Gilbert *et al.*, 2020) and early lockdown measures (Haider *et al.*, 2020). Lockdown measures resulted in many people who relied on daily income not being able to work, yet the deep communal relationships in Africa meant that

people shared whatever resources they had with their neighbors.

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Moodley and Beyer (2019) have also applied Ubuntu to address ethical and social concerns in clinical genomics research. They developed a model based on the Ubuntu philosophy to promote effective and ethically sound community engagement in biobanking research, focusing on the value of solidarity. They emphasized the complexity of obtaining informed consent in genomic biobanking and argued that an Ubuntu-based approach to community engagement would enhance the consent process. In the context of HIV/AIDS information disclosure, Ewuoso (2020) applied Ubuntu ethics to address ethical issues that arise from “the conflict between patient confidentiality and partner notification in serodiscordant relationships.” They argued that the Ubuntu principle of friendly relationships offers a better solution than current ethical frameworks in ensuring that partner notification is given more consideration. Therefore, moving beyond the tradition of doctor-patient confidentiality. Furthermore, they argue that this shift is essential to achieving the United Nations’ sustainable development goal for ending HIV/AIDS pandemic by 2030.

We are not claiming that Ubuntu is perfect; Ubuntu has its share of criticisms. Some researchers have criticized the Ubuntu philosophy as being too communal, over-emphasising the role of communities at the expense of the individual rights of members of society (Kayange, 2020). Similarly, Metz (2011) argued that Ubuntu promotes group thinking which is incompatible with individual liberties. Other researchers have criticized Ubuntu as being anti-individual, vague and incompatible with the ever-evolving society (Viviers and Mzondi, 2016). Rebutting these criticisms, Chuwa (2014) argued that

Ubuntu recognizes the tension between individual and universal rights, at the same time emphasizing the core of ethics. Chuwa further argues that “all principles of ethics are derived and aim at care.” Likewise, the core Ubuntu values, such as the common good, mutual respect, and solidarity, are enthused by care. Therefore, Ubuntu ethics represent an African perspective’s contribution to global medical ethics aimed at decolonizing the influence of western biomedical ethical principles in healthcare.

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This research brief supports that incorporating ethical values from Ubuntu into medical ethics will promote “abantu/omuntu” and uphold the dignity and the inherent value of every person. Thus, delivering equitable care.

Ethical Principles for AI in Healthcare Based on Ubuntu Ethics

Metz argues that compared to Kantianism and utilitarian approaches, Ubuntu presents compelling arguments to address ethical issues in biomedical ethics, such as the point of medical treatment, free and informed consent and standards of care (Metz, 2010a). Likewise, in this research brief, I posit that Ubuntu can help ground and rethink AI ethics in healthcare.

Moreover, Ubuntu ethics present new ways to address ethical concerns of fairness, informed consent and trust facing AI systems, particularly in critical sectors such as healthcare. We admit that the aforementioned ethical issues have been extensively discussed in ethical principles developed out of Western ethics, such as the AI 4People recommendations (Floridi *et al.*, 2018). However, reframing allows emphasis to be placed on

communal and relational aspects that are intrinsic to medical care and public health.

Fairness

In the AI development life cycle, bias can arise from the data used to train the algorithm, the choice of the algorithm or how the algorithm is deployed. For example, if a model is trained on data from a primarily white patient population, it may less accurately predict outcomes for patients of Black or Asian descent, or other minority ethnicities. One way Ubuntu ethics can improve fairness in AI in healthcare is by emphasizing the need to collect diverse data from different regions and races. This data should be collected through community engagement, involving communities and local expert clinicians. Improved data collection can play a role in improving fairness. However, data collection comes at a cost to privacy.

Relatedly, one of the biggest challenges to the principle of fairness in AI ethics is the conflict between individual and group fairness. Improving group fairness may undermine individual privacy or fairness. Ubuntu is based on the idea that “I am because we are.” In other words, the individual is interconnected and interdependent with the community, and one's well-being is tied to the well-being of others. We can apply the concept of Ubuntu to avert the conflict between individual and group fairness by considering the needs and well-being of individual patients, as well as the community at large and society when developing and deploying AI tools. Because the rights of individuals are best protected when the community is prioritized and protected. From the Ubuntu perspective, personhood is relational and depended on interconnectedness with other people.

Finally, in an Ubuntu-informed ethical decision-making process, collective decision-making needs to be centered around the voices of the marginalized. Ubuntu relationalism can achieve this by promoting values of empathy, inclusivity and mutual support. The idea of “Botho” in Ubuntu ethics (Metz and Gaie, 2010), which stresses the importance of balance and harmony, can be applied to foster a culture of active listening and mutual understanding, especially to the underserved and marginalized communities.

Informed consent

The topic of informed consent raises questions about the individual's ability to make a voluntary choice based on adequate knowledge and without any form of coercion (Crow, Matheson, and Steed, 2000). According to Metz, the principles of utilitarianism, Kantianism and African ethics all acknowledge the individual's right to informed consent (Metz, 2010b). However, there are significant differences in terms of what constitutes informed consent, the priority of this right compared to other ethical concerns, the circumstances under which it applies, the individuals it protects, the entities it holds accountable, the consequences of violations, the need for legal enforcement and the methods of safeguarding the right (Metz, 2010b).

Kantian philosophy argues that informed consent is based on an individual's autonomy in decision-making. Therefore, only those deemed to be rational can exercise this right, and those who lack or have limited rational capacity are not considered to have this privilege. Additionally, Kantianism believes rationality is a determining factor of personhood. However, human beings should be respected for their inherent dignity. As emphasized by Eze (2008), at the core of Ubuntu values is respect for the diversity of the human experience. Ubuntu ethics addresses this individualistic and narrow view by anchoring the obligation to informed consent in communal relationships. Additionally, if a person has genuine solidarity with other people, they will exhibit transparency in their dealings with others and actively engage in this process (Metz, 2010c).

For example, it is commonly accepted that a medical professional can only treat patients or perform research on them if they possess a fundamental understanding of the professional's approach and have provided informed consent without being coerced or exploited. Metz (2010a) argues that utilitarian ethics support this notion of obtaining free and informed primarily based on welfarist consequences. They believe that securing such consent would ultimately build trust, prevent disappointment, and encourage patients to follow a prescribed regimen or participate in a study. Contrary, Kantianism emphasize non-consequentialist morality, highlighting that it would be a violation of a person's autonomy in and of itself if a medical professional were to provide treatment or conduct research on them without first obtaining voluntary and informed agreement. The

aforementioned arguments are plausible; however, Ubuntu provides an attractive alternative moral reasoning stating that it is expected to obtain informed consent before administering treatment or conducting research on patients. According to Ubuntu, it is *unfriendly* to treat or study a patient without their informed consent, irrespective of whether the individual is deemed rational or not (Metz, 2010a).

This research brief argues that Ubuntu ethics will foster the collaborative spirit necessary for effective AI ethics related to consent by obliging a *shared* responsibility to avert the abuse of data, solicit input from communities and determine the possible course of action in the event of a violation of the right to informed consent. This adds a relational dimension to the concepts of autonomy and explainability, guiding current principles in AI ethics.

Trust

One of the biggest challenges facing the adoption of AI systems in health care is trust (Shortliffe and Sepúlveda, 2018). The lack of trust in AI solutions is linked to the technical properties of AI and how these properties can be explained clinically. The European Union High-Level Expert Group on Artificial Intelligence (AI HLEG) defines trustworthy AI as AI systems that are designed, developed and used in an ethical, transparent, reliable and fair way (European Commission Directorate-General for Communications Networks Content and Technology, 2019). Trustworthy AI has three main properties:

- Lawful – adhere to ethical values and principles.
- Ethical – comply with laws and regulations.
- Robust – should perform reliably and safely from a technical and social perspective.

This narrow definition of trust is based on Anglo-American jurisprudence and similar legal models. However, trust is much broader than the legal definition based on Anglo-American tradition. Cotterrell (1993) argues that trust should be viewed from a comprehensive ethical perspective, encompassing the concept of trust in social interactions, including the belief in others' benevolence, concern and abilities, as well as the belief that common expectations in similar social situations will not be thwarted. From the Ubuntu perspective, trust is rooted in the interconnectedness

and interdependence of individuals within a community. Trust in Ubuntu is dependent on long-term relationships with the community. In this context, trust is seen as an essential component of building and maintaining strong social relationships. Based on the understanding that we are all connected and that our actions have an impact on those around us. Therefore, trust is seen as a fundamental aspect of social harmony and well-being.

The AI community needs to view trust broadly, and that trust is a long-term goal that cannot be realized without the community.

As a set of values based on trust, Ubuntu ethics can address the issue of trust in two ways, (1) collaboration and long-term partnerships and (2) accountability. First, real trust can be established by creating long-term partnerships and collaborations between developers of AI systems, clinicians and communities. Whereby communities and clinicians become co-designers and developers of solutions.

Secondly, The Ubuntu philosophy emphasizes the humanity of all people therefore, it can inform the design, deployment and use of AI systems in healthcare that promote accountability for the impact of the technology on individual patients, as well as the community as a whole. This will be achieved by encouraging transparent communication of the capabilities and limitations of AI tools to communities. For example, if an AI system is developed, developers should transparently communicate cases where the algorithm fails and only reports positive results.

Furthermore, in Ubuntu, trust is shaped by one's relationship with other people. Through this trust, robust mechanisms can be implemented to monitor and address the negative consequences of AI. Practically, this can be achieved through an impartial oversight body to ensure accountability.

Finally, we can only achieve effective and ethical AI practices when we have trust at all levels of society. Moreover, the AI community needs to view trust broadly, and that trust is a long-term goal that cannot be realized without the community. The trust-building process is a timely exercise and developers of AI systems should not wait to collect data to start building trust with communities. Institutions and individuals developing AI solutions in healthcare need to constantly engage communities on problems they want to solve and how AI can be applied.

Final Thoughts and Recommendations

According to the 'Constitution of the World Health Organization' (1946), "The right to the highest attainable standard of health" suggests a clear set of legal obligations on states to ensure appropriate conditions for the enjoyment of health for all people without discrimination. Therefore, the right to health cannot be separated from other fundamental human rights, such as the right to life and education. In Oshiwambo, we have a saying, "Uundjolowele wolutu oha wu endele kumwe nuundjolowele womuuluyi!" which can be loosely translated to "a healthy body leads to a healthy mind."

If built right, AI has the potential to democratize care, enabling quality and affordable healthcare for everyone, in particular, the marginalized communities. Likewise, AI systems have the potential to exacerbate existing racial, ethnic, and socioeconomic biases that are deeply embedded in our social fabric.

This research brief advances that Ubuntu ethics bring unique perspectives and insights to the table and can guide the design, deployment and use of responsible AI in healthcare. Ubuntu-inspired moral values are an attractive alternative because they emphasize the importance of treating all individuals with dignity and respect and recognizing that all people have an inherent right to personhood. Additionally, Ubuntu ethics place a strong moral obligation on individuals and society as a whole to work towards providing the means for everyone to attain good health and well-being. This will ensure that everyone has access to equitable health care.

While principles and guidelines can be useful to guide clinical healthcare research, the extent to which these guidelines can guide the technical development of AI systems in healthcare remains to be seen.

There is a need to translate ethical values and principles into effective policy reforms to ensure that AI systems in healthcare are trustworthy and aid clinicians in delivering the best care for every patient.

Recently, there have been calls to translate ethical principles and guidelines into regulations and policies that will govern the implementation of ethical AI solutions. For example, the proposal for the EU AI Act, which, if enacted, will be the first attempt globally to regulate AI, is a noble idea. However, this act is based on European values and principles. Thus, the EU AI Act cannot become a new global standard for approaching AI regulation. Recent reports highlighted that the EU AI Act would have implications for international cooperation on AI regulation (Kerry *et al.*, 2021; Meltzer and Tielemans, 2022). In the context of healthcare, international cooperation on AI regulation is important as it will help address issues such as data governance, establish cooperation on accountability and set up global risk-based approaches for developing and deploying AI.

This research brief recommends that the Ubuntu philosophy should be applied to develop a comprehensive ethical framework for AI in healthcare. As a philosophy driven by reciprocity, common good, peaceful relations, emphasis on human dignity and the value of human life, as well as consensus, tolerance and mutual respect, relational theories such as Ubuntu present an appropriate alternative to Western ethics to address the moral issues facing the design, deployment and use of AI in healthcare. Invigorating Ubuntu ethics in AI for healthcare will embed the spirit of “I am because you are,” ensuring that these systems are developed and used in a way that is safe, fair, and beneficial to individual patients and the community as a whole.

Finally, AI ethics affect all of us. There is a need to translate ethical values and principles into effective policy reforms to ensure that AI systems in healthcare are trustworthy and aid clinicians in delivering the best care for every patient. However, this is only possible if AI solutions in healthcare are guided by inclusive values and guidelines. The inclusive and culturally-sensitive nature of Ubuntu ethics can help to address issues related to the diversity and inclusion of AI systems in healthcare, ensuring that AI systems are developed, deployed, and used in ways that are fair and equitable for all members of society, including marginalized communities.

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