

Beyond the Binary: Ethical Considerations in AI-Assisted Healthcare for Transgender and Intersex Communities

Artificial Intelligence (AI) has proven to be a valuable tool in countless industries, such as healthcare, where it has had such effects as enhancing diagnostic accuracy and efficiency. For those with rare health concerns or who simply have difficulty receiving physical examinations, these new technologies, such as medical body scanners and pathology tools, have the potential to be life-changing. Though with any new tool there are ethical implications, particularly when it comes to assessing communities such as transgender (trans) and intersex individuals.

To discuss these ethical implications we must first understand the diversity within gender and sex. Gender encompasses a broad range of identities beyond male and female, while variations in sex characteristics among intersex individuals challenge binary classifications and emphasize the vastness of human diversity. Intersex individuals are born with variations in sex characteristics that don't fit typical definitions of male or female. Trans individuals are those whose gender identity does not correspond with the sex registered for them at birth. Both groups may utilize healthcare to transition physically to align their bodies with their gender identity or ensure their bodies are obtaining the necessary support and care they need to maintain hormone balance and proper body function.

AI algorithms rely on vast datasets for training. Without a sufficiently comprehensive and precise dataset, these algorithms will not be able to produce accurate and viable results. To ethically utilize technologies such as AI-powered diagnostic tools for medical imaging¹ and pathology analysis², it is necessary to ensure the datasets account for the numerous bodily variations that exist. Medical datasets are primarily comprised of cisgender (non-trans) and non-intersex individuals³. Therefore, these tools may lack accuracy when assessing diverse bodies.

Additionally, the medicalization of trans and intersex bodies has historical roots in pathologization⁴, where differences from societal norms are labeled as disorders. There is potential for algorithms to inadvertently perpetuate biases or disparities in healthcare, particularly if they are trained on biased datasets. Without accurate datasets, not only may inaccurate conclusions be drawn, but this narrative can be reinforced by framing certain variations as abnormalities rather than recognizing them as valid expressions of human biology.

In addition to having enough datasets, it is also necessary to accurately compare the data from the patient's body to the relevant data in the dataset. When data can be separated into discrete categories, such as male and female, comparisons are largely straightforward. For instance, if a patient identifies as female, their data can be matched with the female-specific dataset. However, as the understanding of sex and gender broadens, comparisons between groups with less defined categories can prove challenging⁵. It is crucial to make sure patient data can be properly linked to a corresponding dataset, but it is also important to allow individuals to self-classify in a manner that affirms their identity while accurately reflecting their physical attributes.

A benefit of AI diagnostic tools lies in removing the human interaction that is usually necessary for a physical examination. For trans and intersex individuals in particular, physical exams can be daunting due to the potential for discomfort or anxiety stemming from past

negative experiences, fear of judgment, or concerns about privacy and respect for their gender identity and bodily autonomy. A medical professional who is properly educated in taking medical histories for trans and intersex patients should be able to ask questions in a manner that allows the patient to feel affirmed and respected while accurately describing their physical traits⁶. However, if we remove this factor and allow patients to self-classify, it is crucial that they are properly guided in a way that they can accurately convey their physical characteristics.

A solution for the ethical issue of accurate datasets first and foremost is to continue gathering data about diverse bodies. Efforts should be made to collect more diverse datasets that encompass a wide range of gender identities, sex characteristics, and physical variations. This includes actively seeking input and participation from trans and intersex communities to ensure their representation in medical datasets. Collaboration with trans and intersex organizations to gather input on dataset collection and algorithm development would also be beneficial as the resulting tools can be more sensitive to their needs and experiences.

As this data is being collected and algorithms are being trained, there is a need for continuous monitoring and evaluation of these systems for fairness and equity. Continued community feedback from individuals as well as medical professionals who work with these groups is crucial to ensure the algorithms are drawing valid and consistent conclusions, while maintaining the ethical standards of inclusivity and respect for individual autonomy.

The issue of categorization and patient self-classification are interconnected, as there needs to be a connection between how a patient describes themselves and how that is linked to the relevant data. For example, a categorization may not be as straightforward as male, female, trans-male, trans-female, non-binary, and intersex, because there can still exist countless variations within these categories (i.e. trans person who has not taken any steps towards medical transition). A more inclusive approach to sex and gender more commonly seen today is using 'assigned sex at birth' to discuss physical characteristics. While this approach is helpful to understand how a person's physical body might differ from their appearance, it still does not include the wide range of genetic makeups that exist in intersex individuals⁷.

An alternative approach could be allowing multi-layered and faceted classification options, utilizing objective scientific measurements. For example, a patient may provide their chromosome makeup (XY, XX, XXY, etc.) which can give clear insights as to their biological sex characteristics. That coupled with information about medication and gender identity can draw more definitive conclusions about what may be a standard or typical biological makeup for that individual. This convention can be similarly followed in the collection of data used to train AI algorithms.

The integration of AI into medical physical assessment and diagnosis has the potential to enhance the efficiency and accuracy of diagnostic capabilities while increasing quality of patient care, yet it also raises significant ethical considerations. By acknowledging and addressing the current lack of relevant data, the potential for bias, the difficulty with data classification, and challenge with ensuring that patients feel comfortable and respected throughout their interactions, we can create AI technologies that improve patient experience and contribute to more inclusive and equitable healthcare systems.

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