Algorithmic Bias in Artificial Intelligence: A Nursing Informatics Ethics Perspective

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Background

Artificial intelligence (AI) is increasingly used in healthcare for clinical decision support, risk prediction, and administrative efficiency. Michelson et al. (2022) discussed how machine learning, a subset of AI, is being used in adults to diagnose breast cancer from mammograms and assess cardiovascular risk using retinal images. It also helps infectious disease experts predict infections, understand how pathogens interact with hosts, and track the spread of diseases. In adult ICUs, machine learning can identify patients at high risk for circulatory failure.

While these tools offer significant potential, they also carry ethical concerns, especially related to algorithmic bias. Bias in AI can occur when the data used to train algorithms reflect historical inequities or lack representation of diverse populations. These biases can lead to inaccurate or even harmful recommendations, disproportionately affecting marginalized groups. In nursing and healthcare informatics, algorithmic bias is especially concerning because it can influence decisions about patient care, staffing, resource allocation, and outcomes. Nurses, as advocates for patient safety and equity, must understand how AI tools are developed and implemented, and how to recognize when these tools may perpetuate disparities.

The ethical importance of algorithm bias

This topic is critical to nursing and ethics in healthcare informatics because it intersects with patient safety, justice, and informed consent. Nurses use data to guide care decisions, and if those data are processed by biased systems, it can affect ethical patient care. Understanding algorithmic accountability empowers nurses to advocate for ethical AI implementation, transparency in AI decision-making, and safeguards against harm. Specifically, nurse

informaticists play a key role in evaluating, designing, and auditing AI tools in clinical systems, ensuring their alignment with equitable and safe care practices.

A key study revealed that a widely used commercial risk-prediction algorithm in U.S. hospitals and insurance systems discriminated against Black patients. The algorithm used total annual healthcare costs as a proxy for medical need, but since Black patients historically accessed care less frequently, they were assigned lower risk scores. As a result, White patients received more personalized care, despite similar or greater needs among Black patients (O'Connor & Booth, 2022).

Alternative or opposing ethical approaches

Ball Dunlap & Michalowski (2024) discuss model-centric and data-centric AI paradigm. AI systems that use machine learning rely heavily on large volumes of data to function effectively. Traditionally, a model-centric approach has been used, where the focus is on improving the machine learning model itself, often overlooking the quality and complexity of the data. This can lead to ethical problems like bias and inaccurate predictions.

To address these issues, the field is shifting to a data-centric approach, which prioritizes the quality and accuracy of data as the key to improving AI performance. In this strategy, data processes like curation and labeling are ongoing and central, while the model remains relatively stable. This approach also encourages collaboration with domain experts to ensure that relevant, high-quality data is used.

Two ethical approaches emerge in the conversation around algorithmic bias. The utilitarian approach may justify the use of biased AI if it results in overall system efficiency or

improved outcomes for the majority. In contrast, deontological ethics, which emphasizes duties and rights, would argue that any system that disproportionately harms a vulnerable population is inherently unethical, regardless of the broader benefit. Concepts like justice and nonmaleficence also play key roles in critiquing or defending the use of AI tools that might unintentionally discriminate.

Relationship to the Code of Ethics for Nurses and AHIMA Code of Ethics

The Code of Ethics for Nurses emphasizes advocacy, protection of human rights, and commitment to equitable care (Provisions 1, 6, and 8). When nurses recognize biased algorithms in practice, ethical responsibility requires action to protect patients and promote fairness. The AHIMA Code of Ethics similarly mandates the ethical use of data, integrity in information management, and advocacy for information systems that serve the public good. Both codes emphasize the responsibility of healthcare professionals to prevent harm through thoughtful, ethical use of technology.

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