

Letter to Editor

Artificial Intelligence in Traditional Medical Systems: Emerging Ethical and Governance Challenges for Health Systems

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Abstract

The integration of artificial intelligence (AI) into traditional medical systems such as Ayurveda and Traditional Chinese Medicine is expanding rapidly, with applications in diagnosis, treatment planning, and decision support. While these developments may improve access and efficiency, they introduce important challenges for healthcare systems, particularly in relation to data quality, clinical validity, regulatory oversight, and practitioner reliance on algorithmic tools. Current governance frameworks largely overlook AI applications in traditional medicine, creating gaps in accountability and quality assurance. This letter highlights key system-level concerns and emphasizes the need for context-specific validation, regulatory clarity, and interdisciplinary collaboration to ensure the safe and effective integration of AI within traditional healthcare practices.

Key words

Artificial intelligence; Traditional medicine; Ayurveda; Traditional Chinese Medicine; Health systems governance; Clinical decision support; Algorithmic bias; Digital health

Dear Editor,

The rapid integration of artificial intelligence (AI) into healthcare has extended beyond

biomedicine into traditional systems such as Ayurveda and Traditional Chinese Medicine (TCM). While this development is often framed as a pathway toward scalable, personalized care,

it introduces a set of underexplored ethical and governance challenges that are directly relevant to health systems management.

Recent studies have demonstrated the growing use of AI in traditional medicine, including applications in pulse signal analysis, tongue diagnosis, and algorithm-driven herbal recommendations machine learning-based models trained on clinical datasets and classical texts [1, 2]. These tools are increasingly embedded in mobile health platforms and decision-support systems, particularly in Asian healthcare contexts where traditional medicine remains widely utilized [3]. However, their integration raises important questions about reliability, accountability, and system-level oversight.

A key concern relates to the translation of individualized, experience-based diagnostic practices into data-driven models. Traditional systems such as Ayurveda and TCM rely heavily on context-sensitive assessments, including constitution typing and pattern differentiation, which are difficult to standardize [4]. AI models, by contrast, depend on structured datasets and probabilistic inference. This mismatch may result in oversimplified clinical outputs, potentially affecting diagnostic accuracy and patient safety, particularly when such tools are deployed at scale without adequate validation [5].

From a health systems perspective, the increasing use of AI-driven tools in traditional medicine also introduces challenges in clinical governance. Unlike conventional medical AI, which is subject to regulatory scrutiny in many jurisdictions, AI applications in traditional medicine often operate in a regulatory grey zone. In India, for example, while Ayurveda is formally regulated, there are currently no specific guidelines addressing AI-assisted diagnostics or treatment recommendations within this system [6]. Similar gaps have been observed in the context of TCM, where rapid technological adoption has outpaced ethical and regulatory frameworks [7].

Another important issue is the quality and representativeness of data used to train AI systems. Studies have highlighted that biases in training datasets can significantly influence algorithmic outputs, particularly when data are derived from limited or non-representative populations [8]. In traditional medicine, where clinical interpretation is highly individualized, such biases may lead to inappropriate generalizations and inequitable care delivery.

The introduction of AI tools also has implications for workforce dynamics. While decision-support systems may enhance efficiency, there is a risk of over-reliance on algorithmic recommendations, potentially affecting clinical judgment and skill development among practitioners [9]. This is particularly relevant in traditional systems, where diagnostic expertise is acquired through prolonged training and experiential learning.

Given these challenges, there is a need for a more structured approach to integrating AI into traditional medical systems. From a healthcare management perspective, three priorities emerge. First, validation frameworks tailored to traditional diagnostics should be developed to ensure safety and reliability. Second, regulatory bodies should establish clear guidelines addressing accountability, data governance, and quality assurance for AI-based tools in traditional medicine. Third, interdisciplinary collaboration between clinicians, data scientists, and policymakers is essential to ensure that technological innovation aligns with existing care models and health system objectives.

In conclusion, while AI has the potential to enhance accessibility and efficiency in traditional medical systems, its unregulated adoption may introduce new risks at the system level. Addressing these challenges requires not only technological advancement but also careful attention to governance, data quality, and clinical integration. These issues merit greater attention within the healthcare management literature,

particularly as AI continues to reshape diverse models of care delivery.

Abbreviations

AI – Artificial Intelligence

TCM – Traditional Chinese Medicine

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