

Analytical Rigor and Conceptual Clarity in Curriculum Implementation Research [Letter]

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Dear editor

We read with interest the article by Ndhego et al (2026), which examines factors influencing curriculum implementation in a medical laboratory technology programme at the Uganda Institute of Allied Health and Management Sciences.¹ The study addresses a relevant issue in health professions education, particularly in resource-constrained settings, and contributes useful descriptive insights from multiple stakeholder groups. Understanding how institutional, human, and resource-related factors interact remains critical for strengthening curriculum delivery and improving healthcare workforce readiness. However, several concerns related to statistical reporting, interpretive consistency, theoretical integration, and practical applicability limit the robustness and broader contribution of the study. These issues are particularly important given the growing emphasis on evidence-based reform in medical education systems globally.

Statistical Reporting and Analytical Credibility

The reporting of a negative coefficient of determination ($R^2 = -0.302$) is inconsistent with standard regression assumptions, as R^2 is inherently non-negative.¹ This suggests a likely misinterpretation of statistical output or reporting error. Similar inconsistencies—such as the coexistence of large t-values with non-significant p-values—raise further concerns regarding analytical reliability. Such issues are not merely technical. They undermine confidence in the model and its conclusions. In medical education research, statistical clarity is essential to inform policy and institutional decision-making.

Recent studies emphasize the importance of rigorous analytical design and transparent reporting to ensure validity and reproducibility of findings.² To strengthen analytical credibility, future studies should ensure clear differentiation between R^2 and adjusted R^2 , include full model diagnostics, and apply robustness checks. Where inconsistencies arise, reanalysis or alternative modeling approaches—such as mixed-method or multi-level analysis—may provide more reliable insights.

Interpretative Misalignment with Empirical Findings

The study concludes that institutional factors are the primary drivers of curriculum implementation. However, this conclusion appears only partially supported by the reported statistical results. Human resource and resource availability variables are presented as non-significant—and in some cases negatively associated—yet are still discussed as substantively influential. This creates a disconnect between empirical evidence and interpretation. Such interpretive overreach risks overstating certain factors while underrepresenting others.

Evidence from recent curriculum research consistently shows that institutional support, human resources, and stakeholder engagement operate interactively rather than hierarchically.³ A more cautious and balanced interpretation would improve internal validity. Future research should explicitly acknowledge uncertainty, apply comparative model testing, and avoid drawing strong conclusions from unstable or contradictory findings.

Limited Theoretical Integration

Although the study is framed using stakeholder theory, its analytical application remains limited. The study does not explore stakeholder interactions, power relations, or competing priorities—key dimensions of the theory. Contemporary research highlights that effective curriculum implementation depends on dynamic stakeholder engagement, including alignment between institutional leadership, faculty, and external actors.⁴ Moreover, participatory governance models in medical education demonstrate that stakeholder involvement is not only descriptive but structurally influential in shaping outcomes.⁵ Without such analytical depth, stakeholder theory remains underutilized. Future studies should operationalize stakeholder constructs more explicitly and integrate complementary frameworks, such as implementation science or change management theory, to better capture the complexity of curriculum delivery.

Unexplored Counterintuitive Findings

The reported negative relationships between human resources, resource availability, and curriculum implementation are particularly notable. These findings contradict a substantial body of literature demonstrating that staffing capacity, infrastructure, and resource availability are central to effective curriculum delivery and student outcomes.² However, these counterintuitive results are not sufficiently interrogated. Instead, the discussion reiterates established assumptions without reconciling them with empirical findings. This limits the explanatory value of the study.

Recent research suggests that such unexpected relationships may reflect deeper systemic issues, including inefficient resource utilization, misalignment between policy and practice, or institutional constraints.⁴ Addressing these complexities requires more context-sensitive approaches. Mixed-method designs—combining quantitative analysis with qualitative exploration—are increasingly recommended to uncover underlying mechanisms in medical education research.²

From Descriptive Insights to Actionable Strategies

The study offers recommendations such as strengthening professional development and improving resource provision. While relevant, these suggestions remain broad and lack operational specificity. In resource-constrained settings, actionable guidance is critical. Current literature emphasizes the need for targeted, data-driven interventions, including structured faculty development, integrated stakeholder engagement models, and context-specific implementation strategies.⁶ Additionally, policy-oriented research highlights the importance of linking curriculum reform with measurable outcomes and institutional accountability frameworks.⁷ Future research should move beyond general recommendations toward identifying high-impact interventions, prioritizing resource allocation, and outlining feasible implementation pathways. Engaging stakeholders in co-design processes may further enhance relevance and sustainability.

Conclusion

Ndhego et al provide a timely contribution to understanding curriculum implementation challenges in a low-resource educational context. However, concerns regarding statistical plausibility, interpretive alignment, theoretical application, and practical specificity limit the study's overall impact. Advancing research in this area requires greater analytical rigor, deeper theoretical integration, and stronger emphasis on actionable outcomes. Aligning methodological robustness with conceptual clarity and practical relevance is essential to ensure that research can effectively inform policy, strengthen educational systems, and ultimately improve healthcare delivery.

Disclosure

The authors report no conflicts of interest in this communication.

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