Editorial

Leveraging Gamification to Foster Diversity and Inclusion in Healthcare

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Diversity and Inclusion Matters – but is not Self-Evident Across Healthcare

One of your editors recently took part in the world-famous 'Canal Parade', a boat parade supporting the LGBTQ + community sailing through Amsterdam's famous Canals. This is to celebrate that she lives in a city where people can be themselves, choosing who they want to be and who to be in love with. Voicing this as an allied healthcare professional is important, since our society seems to harden and become less tolerant these days. Indeed, gender and diversity matter in healthcare, and it is not obvious nor self-evident that this is acknowledged throughout healthcare. Quite the contrary, really, gender and broader diversity disparities instead seem to persist across healthcare research, delivery, and professional representation. Historically, clinical research and diagnosis reflected male-centered norms: for example, women have been underrepresented in clinical trials, leading to suboptimal understanding of women's symptoms and treatment responses—and even higher rates of adverse drug events (Collino, 2024; Neville, 2024; Wikipedia, 2023). Implicit bias is important, as it further skews diagnosis and care. And this particularly holds up for women of color (Wikipedia, 2023). Disparity issues are compounded by structural barriers in academic medicine that have existed to date. There are fewer women in tenured or senior academic roles, and there is ongoing bias in promotion and hiring (Borger et al., 2025).

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Indeed, women remain underrepresented in hospital leadership -despite constituting the majority of the health workforce -globally, about 70 %; while women are holding only around 25 % of leadership roles and only 15 % of department chairs or deanships are female (Kalbarczyk et al., 2025; Wikipedia Contributors, 2019). In Time's most recent health list, the world's 100 most influential people in health, 13 of the 20 named in the leaders section are women (TIME: Women Are Still Under-Represented in Medical Research). It is not known how many people on this list identify themselves as being LGBTQ+, nor does Time Magazine explicitly categorize individuals by sexual orientation or gender identity. However, the mismatch between the sexes represented in the list is apparent. Moreover, this mismatch impedes an equitable representation in the decision-making across healthcare. Disparities in healthcare matter deeply and throughout, as a lack of representative research and leadership perpetuates inequitable care, undermining the validity of medical evidence and balance in the workforce. Also, not taking into account different viewpoints related to diversity and inclusion excludes key perspectives important to drive innovation and foster health equity.

How to repair? Traditional efforts—such as mandating inclusion of women and diversity in trials (e.g., NIH Revitalization Act), or implementing DEI (Diversity, Equity, and Inclusion) programs—have had some, but limited systemic impact. Clinical trial participation by women gradually increased -but still hovers below equity in many fields; e.g., trials averaged only ∼37 % female enrollment over 1995–2010(Wikipedia, 2023). DEI programs in research institutions often target short-term metrics (e.g., grant submissions or publications) rather than retention, promotion, or structural change (Gichane et al., 2024). Moreover, tokenistic inclusion—without meaningful agency—can fail to foster genuine equity (Carolina et al., 2024). But what if we use gamification contexts to solve the puzzle? Then one has to be careful as well. Assumptions such as "all women prefer customization" or "all men prefer competition" reinforce stereotypes and can backfire. Superficial gamification—with disjointed game elements or overemphasis on competition—may increase engagement in some learners but also introduce new inequities or disengagement for others (Lee et al., 2025).

Foundational models for inclusion by using Gamification

Emerging evidence indicates that gamification cán be harnessed to promote competence, equity, and inclusion in healthcare when designed with inclusive principles and theoretical grounding. Educational "escape rooms" have shown promise in improving intercultural competence and self-efficacy among healthcare learners—particularly in caring for vulnerable migrants and refugees (Moreno-Camellas et al., 2024). Systematic reviews of gamification in health professions education demonstrate positive learning outcomes when game elements such as assessments combined with challenge cues are applied—although mechanisms often remain unexplored (van Gaalen et al., 2020). Broader equity, diversity, and inclusion (EDI)-focused gamification work emphasizes inclusive design: avoid stereotypes, enable flexible and intuitive

interaction, ensure stakeholder agency, and embed ethical reflection to avoid tokenism or "woke-washing" (Carolina et al., 2024). Structural DEI interventions—mentorship, supportive leadership, resource alignment, inclusive climates—are essential complements to any gamified approach. Tailored gamification—attuned to individuals' backgrounds and contexts (not stereotyped by gender or identity)—can indeed support motivation and inclusivity.

Better Governance, Rules, and Playful Technology to Support Inclusion

To effectively use gamification as a tool to support diversity and equity in healthcare, a structured and ethical governance framework is, of course, vital. Use the principles of building an inclusive game, incorporating theory-driven interventions. Whether it is a clinical trial or a system-support initiative, begin with inclusive design principles: co-create with diverse stakeholders, prioritize accessibility, avoid reinforcing stereotypes, and allow multiple engagement paths. Use ground game design as a theory (e.g., self-determination, cultural competence frameworks) and pilot with diverse learners—including women, minorities, and underrepresented groups—to ensure relevance and equity. To foster wider institutional support and—governance, start embedding gamified initiatives within the broader governance structures. Establish ethics review or advisory boards inclusive of diverse representatives. Apply metrics beyond short-term engagement—track retention, confidence, cultural sensitivity, promotion, and real-world application. Furthermore, ensure that governance is aware of, and supports compensation, ownership, and credit for stakeholder contributions to guard against exploitation or tokenism (Carolina et al., 2024). Use the power of play to educate for better understanding. By using playful technologies—e.g., virtual reality simulations, educational escape rooms, serious games, immersive scenarios—empathy, perspective-taking, and agency may be encouraged. Expanding into virtual simulations (e.g., for race and identity in preclinical education) holds potential to sensitize learners to bias and representation issues (Edgar et al., 2024). Importantly, these technologies should be adaptable—allowing different modes of access to address technological disparities and learner preferences. And reflect and evaluate –continuously and longitudinally using a variety of reflection mechanisms. For only then can unintended biases or design flaws surface, and inclusivity and diversity be ensured.

The challenges of gender and diversity inequities in healthcare research, delivery, and leadership are deeply entrenched—but gamification, when guided by inclusive design, governance, theory, and reflective practice, offers a promising educational vector. By co-creating playful, culturally competent technologies and embedding them within structurally sound and ethical frameworks, we can move beyond tokenistic interventions toward transformative change—empowering diverse voices, improving patient care, and enriching medical science.

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