Cumulative Identity-Based Stress in Medical Education: The Trauma of Microaggressions

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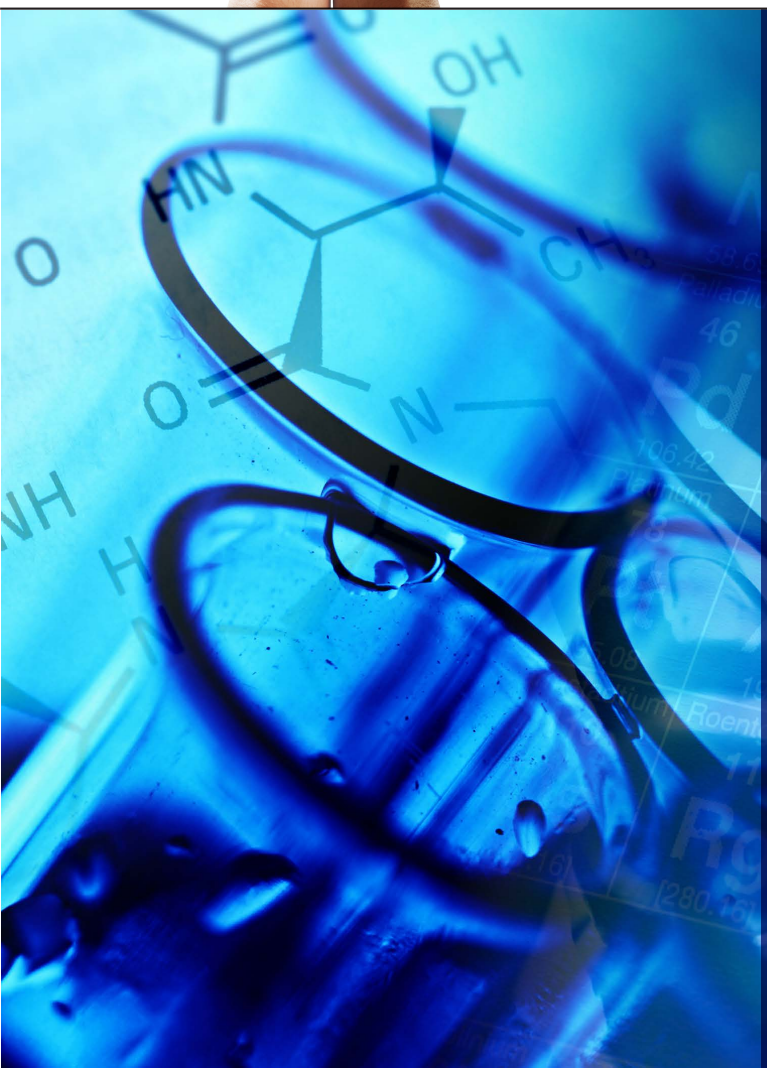

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Introduction

The World Journal of Medical Education and Research (WJMER) (ISSN 2052-1715) is an online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, the aim of the journal is to promote academia and research amongst members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from around the world. The principal objective of this journal is to encourage the aforementioned, from developing countries in particular, to publish their work. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings. We envisage an incessant stream of information flowing along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our editions. We are honoured to welcome you to WJMER.

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A WELCOME MESSAGE FROM THE EDITORS

Dear Reader,

It is our great pleasure to present the thirty-second edition of the World Journal of Medical Education and Research (WJMER). This issue brings together a diverse collection of scholarly articles that reflect current innovations, challenges, and opportunities in medical education, health sciences, and public health across global contexts. The contributions highlight the evolving nature of healthcare education, with a particular emphasis on learner development, equity, pedagogy, and improvement at a systems level.

The opening article by Alarar et al. evaluates the effectiveness of an online scientific research methodology course for undergraduate students at Syrian universities. Using pre- and post-course assessments, the authors demonstrate significant improvements in students' research knowledge and skills, underscoring the value of structured e-learning approaches in strengthening research capacity, particularly in crisis-affected and resource-limited settings.

In the following article, Ponce-Garcia et al. explore microaggressions in medical education and reframe them as cumulative, identity-based trauma rather than isolated interpersonal incidents. Drawing on interdisciplinary evidence, the paper highlights the biological, psychological, and educational consequences of chronic identity-based stress and calls for trauma-informed institutional reforms to foster inclusive and supportive learning environments.

The next study by Nojoum et al. examines Iraqi medical students' perceptions of undergraduate breast curricula during the COVID-19 pandemic. Through qualitative interviews, the authors identify key themes related to e-learning, gaps in breast disease education, and barriers to clinical examination. The findings reveal widespread dissatisfaction with current teaching approaches while highlighting structural challenges that were exacerbated by the pandemic.

Farooq et al. investigate the relationship between emotional intelligence and academic performance amongst undergraduate medical students in Pakistan. The study demonstrates a significant positive correlation between emotional intelligence and academic success, suggesting that emotional competencies may play an important role in student performance, stress management, and motivation within demanding medical programmes.

This issue also includes a narrative review by Pratham and Bhalekar on the therapeutic potential of natural compounds in neurotransmitter-related diseases such as Parkinson's and Alzheimer's disease. The authors discuss emerging evidence on compounds such as curcumin and flavonoids, highlighting their neuroprotective and anti-inflammatory properties while emphasising the need for further research to translate these findings into effective clinical applications.

Singha and Majumder focus on medical education for community health workers. The paper synthesises evidence on educational strategies that enhance competencies, motivation, and public health outcomes, advocating for competency-based, digitally-supported, and rights-based approaches to professional development as a foundation for equitable health systems.

The effectiveness of integrative case-based learning and case seminar approaches in teaching pathology laboratory concepts to PharmD students is examined by Garalla and Burgeia in the next study. The findings indicate that active learning strategies significantly improve knowledge acquisition, critical thinking, and clinical preparedness compared to traditional teaching methods, reinforcing the value of learner-centred pedagogies.

In the subsequent article, Ayub Khan et al. assess alumni perceptions of a Master in Health Professions Education (MHPE) program in Pakistan. Using the RE-AIM framework, the study highlights perceived gains in teaching capacity, curriculum development, and leadership skills, while identifying areas for improvement in educational evaluation and mentorship to maximise programme impact across career stages.

The final article by John et al. explores the use of data analytics in improving health education outcomes, presenting a human-centred framework that integrates technology, pedagogy, ethics, and organisational capability. The paper offers practical recommendations for education leaders, demonstrating how analytics can enhance learner engagement, institutional decision-making, and community health literacy when implemented responsibly.

We sincerely hope that you find the articles in this edition educational, thought-provoking, and relevant to your academic and professional interests. Together, these contributions reflect WJMER's ongoing commitment to advancing scholarship that informs practice, promotes equity, and strengthens health education globally.

Ms Karen Au-Yeung
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Cumulative Identity-Based Stress in Medical Education: The Trauma of Microaggressions

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Abstract:
Microaggressions in medical education are often perceived as minor interpersonal slights. Emerging research identifies them as cumulative, identity-based harms with biological, psychological, and educational consequences. This review synthesizes literature from psychology, education, and health sciences to position microaggressions as a form of chronic trauma that disproportionately affects learners with marginalized identities. Drawing on cumulative trauma theory, minority stress frameworks, and biomarker studies, we detail how repeated identity-based stress disrupts physiological regulation, undermines psychological well-being, and fractures professional development. We examine how hierarchical clinical learning environments and institutional silence leaves affected learners feeling unsupported. Trauma-informed models offer a comprehensive approach by addressing relational, structural, and cultural dimensions of harm. We recommend that healthcare education systems move beyond awareness toward structural redesign, including transparent reporting systems, trauma-informed faculty development, and accountability measures embedded in evaluation practices. Recognizing microaggressions as cumulative trauma is essential for creating educational environments where all learners can thrive.

Key Words:
Microaggressions; Cumulative Trauma; Identity-Based Stress; Trauma-Informed Education; Medical Education

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Introduction

In healthcare, trauma is often imagined as something dramatic. But some accumulate over time, slowly wearing on the individual. Microaggressions, brief and often subtle comments or actions that devalue, stereotype, or dismiss, are frequently minimized or overlooked. In clinical education settings, especially for those with marginalized identities, these experiences are common, persistent, and consequential.[1,2]

Microaggressions are patterns that shape how individuals are seen, heard, and treated. For racialized, gender-diverse, and other minoritized healthcare professionals, microaggressions influence feedback, affect relationships, and limit opportunities. Over time, they contribute to emotional fatigue, psychological stress, and the slow erosion of professional confidence.[3-5] Despite this, they are rarely treated as a form of trauma in medical training environments.[6,]

This review positions microaggressions as a form of cumulative trauma in medical education. Drawing on research from psychology, education, and physiology, we examine how these experiences affect individuals and the systems in which they train and conclude by making recommendations for trauma-informed and structurally responsive educational environments.

Conceptual Framework

Microaggressions are defined as subtle, often unintentional comments or behaviors that communicate hostile, derogatory, or negative messages to individuals based on their identity.[8] They often appear as slights, assumptions, or exclusions, especially in environments marked by hierarchy, time pressure, and evaluative stress. Though frequently dismissed as trivial or socially awkward moments, research suggests that microaggressions contribute to sustained psychological distress and structural marginalization when they occur repeatedly.[6,7,9]

Cumulative trauma theory and racial trauma frameworks offer a lens through which to understand this impact. These models emphasize the effects of repeated, identity-related harm, particularly in contexts where repair, recognition,

or accountability is absent.[4,10] Trauma is shaped not only by the content of an experience but by its frequency, the inability to escape it, and the response—or lack of response—from others.[5,11] In medical training settings, these conditions are often met. Power differentials discourage response, institutional silence communicates indifference, and cultural norms around professionalism reward endurance rather than honesty.[7,12]

The concept of racial battle fatigue is useful in articulating how ongoing exposure to microaggressions results in both psychological and physiological depletion. Minoritized trainees are often required to suppress emotional reactions, manage internal conflict, and remain composed in the face of cumulative identity-based harm.[4,6] These patterns of vigilance and withdrawal mirror trauma responses, and they also contribute to burnout, disengagement, and attrition.[3,13]

Additionally, the minority stress model highlights how stigmatized identities are associated with chronic exposure to environmental stressors, even when those stressors are normalized within the institutional culture.[5] Research shows that the intersection of racial, gender, and sexual minority statuses intensifies this burden and amplifies the health and academic consequences.[3,5,13]

Some scholars in medical care education remain cautious about applying trauma frameworks to everyday interactions, out of concern that the term "trauma" may lose specificity. This concern is worth acknowledging. However, growing empirical evidence, including biomarker studies and repeated links to mental health symptoms, supports the argument that microaggressions meet the functional criteria for trauma, particularly in their cumulative form.[4,6,14]

Recognizing microaggressions as trauma also helps shift attention away from individual perception and toward structural accountability. The harm is about patterned experiences shaped by institutional policies, clinical culture, and power hierarchies that remain largely unexamined.[7,15] Reframing these dynamics is essential to building trauma-informed systems that do not just prepare individuals to survive, but that actively reduce the sources of harm.

Biological Consequences of Identity-Based Stressors

Chronic exposure to identity-based stressors has been shown to disrupt biological systems involved in stress regulation, including endocrine, immune, and autonomic nervous system pathways.[12,14] Biomarker data support these disruptions and provide measurable evidence of how microaggressions become embedded in the body.[16,17]

Multiple studies have found that individuals who report high levels of exposure to microaggressions or chronic discrimination often exhibit flattened diurnal cortisol slopes, which are commonly associated with allostatic load, chronic stress, and burnout.[12,16,17] These findings suggest that repeated identity-based stress interferes with the body's ability to regulate and recover from daily stressors.

Nam et al. used ecological momentary assessment methods to assess salivary cortisol and alpha-amylase in Black adults in real-world contexts.[14] Participants who reported real-time discrimination showed physiological changes across the day, including altered stress hormone levels that persisted beyond the specific incident. These findings align with the narratives of minoritized medical learners who describe heightened emotional vigilance and exhaustion following repeated incidents of subtle bias.[4, 6]

Longitudinal work adds further support by showing that adolescents who experienced racial discrimination displayed altered hypothalamic-pituitary-adrenal (HPA) axis function in early adulthood.[12] The effects were especially pronounced among participants who lacked a strong racial or ethnic identity. When experienced early in life, these biological changes may become embedded in physiological response patterns that carry into academic and professional environments.[5,12]

These studies make clear that microaggressions have physiological consequences, not just emotional or cognitive ones. Their impact is often cumulative, operating through repeated disruptions to regulatory systems that affect sleep, concentration, decision-making, and emotional balance.[14,17] In medical education, where learners are constantly assessed and expected to perform under pressure, these changes may go unrecognized or misinterpreted as burnout, disengagement, or poor resilience.[3,7] The biological embedding of harm provides further justification for treating microaggressions as a form of trauma and for designing educational environments that reduce exposure to these stressors rather than placing the burden of endurance on the individual.[6,9]

Educational Consequences of Identity-Based Stressors

Medical education occurs within structured, hierarchical systems where power is unevenly distributed. These systems shape how microaggressions are experienced, whether they are addressed, and how they influence learning. While

institutions often promote values such as neutrality, meritocracy, or professionalism, these ideals can obscure identity-based harm and reinforce silence when that harm occurs.[7,11] The result is that many learners internalize exclusionary experiences, not as policy failures, but as personal deficits.[2,4]

Clinical training environments amplify this effect. Students and residents rely on preceptors and supervisors for grades, letters of recommendation, and rotation evaluations. These relationships can deter trainees from speaking up about bias or mistreatment, particularly when incidents are subtle or coded.[1,9] In one study, a student described being repeatedly referred to as "articulate" in ways that made them feel both visible and othered. Although the comments were framed as compliments, the repetition and context left them feeling hyper-scrutinized and unsure how to respond.[2]

Institutional responses to reported microaggressions are frequently slow, non-specific, or filtered through legal and reputational concerns. Valdez et al. describe a case in which a physician of color's concerns were dismissed in favor of maintaining high patient satisfaction scores.[8] In that case, professionalism was narrowly interpreted to prioritize patient perceptions over equity and well-being. Lukes and Bangs argued that anti-discrimination law tends to rely on clear intent and overt harm, which are often absent in microaggression cases.[15] As a result, legal standards and internal reporting structures are poorly suited to address the cumulative effects of repeated, subtle acts of bias.

Research in academic medicine and health professions education consistently finds that microaggressions are associated with imposter syndrome, disengagement, and professional withdrawal.[3,5] These effects are compounded for students who hold intersecting marginalized identities. Becerra et al. found that students managing the combined weight of racism, economic insecurity, and institutional invisibility reported significant disruptions to their learning and future planning.[13] To address this, institutions must build accountability into evaluation criteria, supervisory roles, and curricular oversight. While intervention strategies are discussed in later sections, it is worth noting that systems change requires more than awareness. It requires redesigning the conditions that allow bias to remain invisible. When institutions fail to acknowledge the harm caused by microaggressions, they are contributing to a cycle of trauma that undermines the very goals of medical education.

Legal and Cultural Barriers

Efforts to address microaggressions in medical education are often limited by the structures designed to maintain institutional stability. Legal frameworks prohibit discrimination and harassment but rarely account for the subtle, cumulative nature of microaggressions.[7,15] Civil rights protections are typically triggered by intent, severity, or repetition that can be documented.[15] Many microaggressions do not meet these thresholds, despite their lasting psychological and professional consequences.[4,6]

Institutional policies often mirror these legal standards. Student and trainee handbooks may include bias reporting systems, but these processes are frequently routed through compliance offices or Human Resources structures with narrow mandates.[7,9] Reports are often evaluated as interpersonal misunderstandings or professionalism concerns, rather than as signs of systemic bias.[7,8]

Professional norms reinforce this dynamic. In clinical settings, learners are expected to be resilient, deferential, and composed.[1,5] Raising concerns about identity-based harm can be interpreted as overreacting, especially in environments where feedback is subjective and dependent on senior faculty.[5,9] These power dynamics place students in a double bind. To advocate for themselves risks being labeled unprofessional, while remaining silent leads to further internalization of harm.[4,6,7]

Gatekeepers such as clerkship directors, faculty evaluators, and program leadership play a central role in maintaining these norms.[7,9] Even when they believe bias has occurred, many express uncertainty about how to intervene without legal precedent or institutional backing.[5,15] As a result, silence often becomes the default institutional response.[2,7] Learners understand this dynamic and may choose not to report at all, fearing retaliation, reputational damage, or bureaucratic inaction.[8,9]

When legal protections and cultural norms fail to acknowledge microaggressions as legitimate forms of harm, institutions become complicit in their persistence.[7,11] The result is not simply bureaucratic inefficiency but structural.[4,6] Moving forward, institutions must develop responses that are not limited to documentation or compliance but grounded in care, equity, and collective responsibility.[8,18]

Interventions and Interruptions

Efforts to address microaggressions in medical education have increased in recent years, but many interventions remain limited in scope. Common approaches include one-time workshops,

communication skills training, or implicit bias modules.[7,18] While these interventions may raise awareness, they are often insufficient to counter the cumulative impact of institutionalized microaggressions.[8,18] Most programs target learners and emphasize individual self-awareness, active listening, and interpersonal empathy.[18] Only a small subset focused on faculty development, clinical power dynamics, or institutional responsibility. Few programs incorporate trauma-informed principles or engaged intersectional frameworks, limiting their ability to address the complexity of real-world bias.[9,18] These limitations suggest that many interventions remain rooted in diversity training paradigms that are ill-equipped to address cumulative harm.[7,11] Lasting change requires a shift from individual behavior modification toward structural and relational accountability.[5,7]

Some programs have demonstrated more promising outcomes. Walker et al. developed the VITALS framework to help medical students identify and respond to microaggressions using specific, structured strategies.[19] The curriculum emphasized validation, inquiry, and collaborative problem-solving, while offering opportunities for practice and reflection. Participants reported improved confidence in responding to bias, stronger peer connection, and reduced isolation. These findings support the idea that relational safety and practice-based learning are critical components of intervention success.[7,19]

Govindraj et al. introduced the LIFT framework through a bystander simulation curriculum for internal medicine residents.[20] The program focused on de-escalation, boundary-setting, and navigating power dynamics in clinical scenarios. Residents who completed the training reported increased awareness of subtle bias and greater comfort addressing it in practice. These results underscore the value of applying intervention strategies within realistic clinical settings where learners must balance interpersonal diplomacy with advocacy.[9,20]

Essakow et al. designed a virtual experiential learning model for educators, combining role-play, observation, and guided feedback.[21] The training aimed to help faculty identify and address microaggressions in real-time, while modeling accountability for students. Participants described increased confidence and greater clarity on their role in shaping safe learning environments. This reflects a growing recognition that faculty intervention is essential to shifting institutional culture.[2,7]

Despite these gains, most interventions still operate in institutions without consistent infrastructure for follow-up, accountability, or policy.[8,18] Many programs are introduced as pilot efforts without long-term funding or integration into curricular frameworks.[18] Others frame microaggressions as communication breakdowns or individual misunderstandings, which can obscure their structural origins.[7,11] These framing choices risk recentering individual discomfort rather than systemic harm.[7,9]

Trauma-informed models focus on recognizing patterns of power, repetition, and vulnerability, rather than singular intent. [5,11] They emphasize the importance of predictable, transparent response systems and shared responsibility for harm reduction.[7,18] Interventions grounded in trauma frameworks can also support collective healing and institutional change, rather than place the burden solely on those most affected.[7,9]

Finally, interventions must address the unequal distribution of responsibility. Trainees are often expected to recognize and respond to microaggressions without guarantees of support or safety.[19,20] This imbalance becomes institutionalized when faculty, supervisors, and leadership are not equipped or held accountable.[2,7] For interventions to succeed, they must shift the center of responsibility from individuals to systems, and from awareness to meaningful action.[7,8,21]

Trama-Informed Medical Education

Creating trauma-informed medical education environments requires a shift in how institutions define harm, distribute responsibility, and structure accountability.[7, 11] Microaggressions reflect and reinforce broader institutional dynamics, including hierarchies, inequities, and professional norms that shape how learners are evaluated, supported, and heard.[7,9,11] Addressing these dynamics requires systemic strategies grounded in trauma theory, equity frameworks, and institutional commitment.[5,7,18]

Trauma-informed systems are anchored in principles including safety, trust, transparency, peer support, and empowerment.[5,7,18] These principles provide a foundation for creating educational environments that recognize harm, reduce re-traumatization, and affirm the identities and experiences of learners.[5,18] In practice, this means designing systems that proactively prevent exclusion and create space for honest reflection, institutional response, and sustainable repair.[7,8]

Walker et al. integrated trauma-informed strategies into small-group learning by preparing facilitators to recognize signs of learner distress and create space for debriefing microaggressions.[19] Students reported

increased confidence in navigating identity-related tension and described the sessions as more emotionally safe. Similarly, Govindraj et al. embedded bystander response skills into clinical simulations using role-play and debriefing.[20] Residents who completed the program reported increased awareness of microaggressions and greater comfort responding during clinical rounds These findings support the conclusion that trauma-informed interventions can be effectively implemented in authentic clinical training spaces.

Institutions should develop enforceable standards at the policy level rather than relying on broad diversity statements.[7,15] Reporting systems must be clearly communicated, confidential, and designed to reflect institutional hierarchies and learner vulnerability.[8,9] Accountability structures should include options such as bias review committees with learner representation, periodic report trends audits, and outcomes documentation, even when no formal investigation is pursued.[7-9] Transparency and documentation are key to rebuilding institutional trust.[7,8]

Many educators report uncertainty about recognizing and responding to microaggressions, especially in patient-facing or supervisory roles.[2,21] Trauma-informed faculty development should be longitudinal, interactive, and linked to teaching.[5,18,21] These programs should address bias in grading, feedback, and mentorship, all of which significantly influence learner outcomes.[3,6] When supported in these efforts, faculty report greater clarity in their role and improved confidence in addressing identity-related harm.[7,21]

Microaggressions and cumulative trauma should be discussed throughout professional identity formation, ethics, communication, and systems-based practice curricula.[4,7,11] Programs that address these topics explicitly reduce learner isolation and increase student engagement.[6,19] Students participating in trauma-informed curricula have reported increased self-efficacy, stronger identity development, and a greater sense of institutional care.[9,19]

Institutions should reconsider how professionalism is assessed and whose norms define appropriate behavior.[1,5] Assessments that value peer advocacy, equity engagement, and learning environment contributions signal to learners that institutional priorities align with stated commitments to inclusion and wellbeing.[2,7,19] Faculty evaluation tools can also be updated to reflect responsibility for responding to harm and contributing to culturally responsive.[18,21]

Recommendations

Institutions must move beyond episodic training and toward sustained, systemic transformation. This includes embedding concepts such as racial battle fatigue, minority stress, and identity-based trauma into curricula, faculty development, and clinical learning environments. Structured frameworks such as VITALS and LIFT can serve as practical tools to help learners recognize, respond to, and recover from microaggressions. However, they must be integrated across developmental stages and reinforced through evaluation systems that prioritize cultural responsiveness, advocacy, and structural competence.

Faculty and preceptors should be supported through longitudinal training programs grounded in trauma-informed pedagogy. These programs must include experiential learning and skills-based practice in navigating identity-based harm. Evaluation and promotion systems must also be redesigned to reward equity work and hold individuals accountable for upholding inclusive learning climates.

In clinical settings, identity-based harm should be treated as a patient safety risk rather than as a diversity initiative. All members of the healthcare team, including clerical, support, and administrative staff, should receive role-specific training in culturally responsive communication on a recurring basis. Microaggressions directed at patients undermine trust and the quality of care, while those exchanged among staff weaken psychological safety and team cohesion. Medical and nursing curricula should adopt trauma-informed approaches in debriefing practices, communication modules, and professionalism assessments. Inclusion must be modeled consistently by attending physicians, nursing leaders, and senior staff to ensure clear expectations across all roles.

Conclusion

Equity in medical education cannot be achieved through awareness alone. Institutions must adopt a trauma-informed, structurally accountable approach that prioritizes transparency, relational repair, and learner empowerment. Faculty should be prepared to recognize, interrupt, and prevent identity-based harm. Evaluation systems must be revised to reward inclusive practices and equity leadership. Reporting mechanisms should be visible, responsive, and grounded in a culture of care and follow-up. Learners, particularly those from underrepresented and global backgrounds, must be engaged as co-creators in the ongoing effort to improve policy, pedagogy, and institutional culture.

Meaningful transformation requires a shift from

documentation to disruption and from symptom management to system redesign. When microaggressions are understood as cumulative trauma, and when institutions respond with clarity, consistency, and courage, medical education can begin to cultivate a culture of care where all learners are seen, supported, and empowered to succeed.

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