how bias is evaluated in studies of medical applications of LLMs, and summarised methodologies, reporting practices,and limitations of current bias detection and mitigation approaches to support safe and trustworthy implementation.

Methods: We searched databases (EMBASE, MEDLINE, PsycINFO, PubMed, ACL Anthology, ACM Digital Library, arXiv, medRxiv, and bioRxiv; 2017–June 2025), following PRISMA guidance. After de-duplication, >1,800 records were retrieved for title/abstract screening. We assessed 3,664 full-text articles against pre-specified eligibility criteria. Studies were included if they evaluated a medical application of an LLM and reported any explicit bias assessment. Studies that otherwise met eligibility for medical LLM evaluation but did not assess bias were recorded separately to quantify the evidence gap. Screening and data extraction were conducted by multiple reviewers with disagreements resolved by discussion. We extracted specialty (including psychiatry), use case (e.g. decision support, documentation, patient communication), evaluation setting (benchmark/vignette vs clinical data), protected attributes and bias targets assessed, bias methods/metrics, and mitigation strategies proposed or tested. Findings were synthesised narratively with descriptive counts across specialties and use cases.

Results: Of 3,664 full texts screened, 278 studies met inclusion by explicitly assessing bias. A further 757 studies evaluated medical applications of LLMs and otherwise met eligibility criteria but did not report any bias assessment, indicating that most medical LLM evaluations omit bias evaluation. Included studies spanned clinical decision support, medical documentation, patient communication, education, and biomedical research across multiple specialties. Bias assessment rates varied by specialty: psychiatry 21/180 (11.7%), radiology 7/107 (6.5%), and oncology 5/51 (9.8%). Bias assessments most commonly examined demographic bias (gender, race/ethnicity, age) and variation in symptom or diseasepresentation. Methodologies included prompt-based probing (e.g. clinical vignettes), counterfactual testing, and red teaming to elicit biased responses; statistical comparisons of performance across groups (including fairness-adjusted performance metrics such as the FAP score); and clinician-led safety evaluation frameworks assessing output suitability. Proposed mitigation strategies included more diverse training data, reinforcement learning with human feedback (RLHF), direct preference optimisation, and ongoing human oversight.

Conclusion: Despite rapid growth in medical LLM research, explicit bias assessment remains inconsistent and frequently absent. Standardised, transparent bias evaluation across patient populations, tasks, and clinical contexts is needed to support safe implementation and ensure equitable provision.

Abstracts were reviewed by the RCPsych Academic Faculty rather than by the standard *BJPsych Open* peer review process and should not be quoted as peer-reviewed by *BJPsych Open* in any subsequent publication.

Design and Evaluation of an Immersive, Interactive Acceptance and Commitment Therapy (ACT) Intervention Targeting OCD, Depression, and Anxiety in Medical Students: A Pilot Study

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Aims: Acceptance and Commitment Therapy (ACT) is a third-wave cognitive-behavioural therapeutic modality that promotes psychological flexibility through six core principles: acceptance, cognitive defusion, contact with the present moment, self-as-context, values, and committed action. This pilot study aimed to evaluate the effectiveness of an immersive ACT intervention delivered in a fully interactive environment for reducing symptoms of depression, anxiety, and obsessive-compulsive disorder (OCD) among medical students. The immersive ACT experience was created by uploading and adapting ACT therapeutic content into the Immersive Studio software, which projected the material onto the walls of the suite. Participants could interact with the content presented visually and auditorily by touching the walls. The use of immersive technology was intended to enhance engagement and experiential learning of ACT principles, thereby reducing symptoms of depression, anxiety, and/or OCD.

Methods: A pre-post intervention design was implemented at Cardiff University's School of Medicine HIVE immersive learning suite: a 5×5 metre room equipped with fully immersiveand interactive capabilities. This environment enabled participants to engage with ACT content across three immersive modules, each designed to teach and apply ACT's six core principles in a dynamic and experiential manner. Pre-and post-intervention scores were collated using the Patient Health Questionnaire-9 (PHQ-9) for depression, Generalised Anxiety Disorder-7 (GAD-7) for anxiety, and Obsessive-Compulsive Inventory-Revised (OCI-R) for OCD as standardised, validated measures.

Results: Ten medical students completed all elements of the three immersive ACT modules, as well as the pre and post measures. Scores from the three validated measures were analysed using the Wilcoxon Signed Rank test to assess changes in symptom severity. Depressive symptoms significantly decreased following the intervention, with mean PHQ-9 scores reducing from 7.13 to 4.00 ($z=-2.207$, $p<0.05$). No statistically significant changes were observed in anxiety (GAD-7) or OCD (OCI-R) scores.

Conclusion: Delivering ACT as an immersive and interactive therapeutic modality appears to be an effective approach for reducing depressive symptoms among medical students. This pilot study highlights the potential of immersive environments to enhance psychological interventions and enhance psychological flexibility. Further research with larger samples (currently underway) is required to examine its impact on anxiety, depression and OCD symptoms and to optimise immersive delivery for broader mental health benefits.

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Do Past Psychiatric Conditions or Pre-Existing Vulnerabilities Influence the Neuropsychiatric Presentation in People with Neurological Conditions?

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Aims: To establish whether past psychiatric conditions or pre-existing vulnerabilities influence the neuropsychiatric presentation

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