

When drugs speak: an exploratory convergent mixed-methods study of a first- person creative narrative activity for anti-seizure medication pharmacology in undergraduate medical education

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Abstract

Background

Anti-seizure medications (ASMs) are difficult to teach. Their mechanisms overlap, their indications cross over, and their adverse effect profiles are long enough that students often default to rote memorisation. Conventional revision -re-reading notes, highlighting, rehearsing lists -keeps facts available for recall but does little to embed them in a usable framework, and it rarely engages retrieval practice or elaborative encoding in any deliberate way. To our knowledge, no prior study has evaluated structured first-person creative writing as a pharmacology learning activity within a formal mixed-methods design. We therefore designed and evaluated *When Drugs Speak*, a 30-minute, zero-cost classroom activity in which students write from the point of view of an ASM.

Methods

We recruited second-year MBBS students at the Department of Pharmacology, JIPMER Karaikal, India. Of 60 students enrolled, 56 took part (93.3%) in a 30-minute session combining brief self-directed revision with free-format first-person creative writing about a chosen ASM. The design was an exploratory convergent parallel mixed-methods study, following Creswell and Plano Clark. Immediately after the activity, students completed a six-item binary (yes/no) feedback form capturing their perceptions of the session. Separately, two investigators carried out an inductive thematic analysis of all 56 handwritten narratives using Braun and Clarke's six-phase approach, supported by a cohort-level rubric covering six pharmacological domains. The two strands were analysed on their own terms and then brought together through a Joint Display. Ethical approval was obtained from the Institutional Ethics Committee for Observational Studies, JIPMER, Puducherry (JIP/IEC-OS/2024/628, dated 08 May 2025), and the study follows the COREQ and GRAMMS reporting guidelines for its qualitative and mixed-methods components respectively.

Results

All 56 participants returned complete feedback forms and narratives. Endorsement on the perception survey was consistently high: 96.4% said they preferred the activity to conventional revision, 96.4% felt it improved their retention, 92.9% reported increased interest in pharmacology, 96.4% found it broke the monotony of revision, 85.7% felt their conceptual understanding had improved, and 92.9% wanted it included periodically in the curriculum. The thematic analysis produced five themes - the drug became a character, mechanism moved from textbook to story, adverse effects became memorable warnings, the narratives encouraged clinical reasoning, and the act of writing itself gave students a sense of ownership over the material. When the two strands were placed side by side in a Joint Display, the qualitative themes mostly expanded on what the survey numbers showed rather than simply confirming

them - together they point to retrieval practice, elaborative encoding, and narrative schema-building as plausible mechanisms behind the perceived benefit, none of which passive revision typically engages.

Conclusions

A structured first-person narrative writing activity appears feasible, costs nothing to run, and was well received by students, who reported high engagement and perceived learning benefit. The mixed-methods integration points to specific mechanisms - emotionally anchored adverse-effect recall, mechanism-driven comprehension, and spontaneous clinical reasoning - that may underlie these perceptions, though pharmacokinetic content came through less consistently and would benefit from additional reinforcement. Larger, multi-site studies with objective outcome measures and longer follow-up are needed before efficacy claims can be made.

Introduction

Anti-seizure medications (ASMs) are a notoriously tough corner of the undergraduate pharmacology curriculum. The mechanisms overlap between drug classes, the indications shift depending on seizure type, and the adverse effect lists run long - gingival hyperplasia, hirsutism, teratogenicity, hepatotoxicity, and more, often presented as undifferentiated bullet points. Students typically meet this material through passive revision: re-reading, highlighting, rehearsing lists shortly before an exam. These methods keep information accessible in the short term but do little to build the kind of integrated understanding associated with durable retention and clinical reasoning.[1]

There is good reason to think a different approach could help. Constructivist accounts of learning argue that people remember information better when it sits inside a story rather than a list.[2] Separately, retrieval practice - actively producing information from memory rather than simply re-reading it - is one of the better-evidenced techniques in the learning sciences,[3] and its effect seems to grow when paired with elaborative encoding, where facts are tied to emotionally meaningful contexts.[4] Creative narrative writing arguably does both at once: writing convincingly as a drug, in its own voice, requires a student to pull pharmacological facts from memory, rearrange them so the story makes sense, and place them in some kind of emotional or relational frame. That is not rote recall - it sits closer to the comprehension, application, and synthesis levels of Bloom's taxonomy.[1]

Creative writing has been used before in health professions education - in nursing, as a route to transformative learning,[5] and in pharmacology, through drama-based teaching.[6] What hasn't been tried, as far as we can tell, is a structured first-person drug narrative activity evaluated through a convergent mixed-methods design in an MBBS pharmacology setting. Given how little this kind of intervention costs to run, that gap seemed worth closing.

This paper reports on *When Drugs Speak* - a short classroom activity in which students write, in the first person, as an ASM, giving it a voice shaped by its own pharmacological identity. We used a convergent

parallel mixed-methods approach,[7] bringing together a short student perception survey and a thematic analysis of the written narratives through a Joint Display, with the aim of working out what specific mechanisms, if any, might explain the perceived benefit of the activity.

Methods

Ethics statement

Approval was granted by the Institutional Ethics Committee for Observational Studies (IEC-OS), JIPMER, Puducherry (Approval No. JIP/IEC-OS/2024/628; dated 08 May 2025). All participants gave written informed consent before any data was collected. Taking part was entirely voluntary, and choosing not to take part had no bearing on academic standing. Student data have been anonymised throughout; where narrative excerpts are quoted, they are labelled only as 'Student [n]'.

Study design

We used an exploratory convergent parallel mixed-methods design, following Creswell and Plano Clark. [7] Quantitative and qualitative data were collected at the same time, analysed separately, and then brought together using a Joint Display matrix.[8] Reporting follows the COREQ checklist for the qualitative component (Additional file 1) and the GRAMMS guidelines for the mixed-methods design (Additional file 2). We want to be explicit up front: this was designed as a feasibility and acceptability study. It was not powered, nor intended, to demonstrate objective learning outcomes.

Setting and participants

The study took place in the Department of Pharmacology at JIPMER Karaikal, a constituent campus of JIPMER (Jawaharlal Institute of Postgraduate Medical Education and Research), an autonomous Institution of National Importance under India's Ministry of Health and Family Welfare. Pharmacology is taught in the second MBBS year there. At the time of the study, 60 second-year students had completed the scheduled didactic teaching on ASMs; 56 of them took part and gave complete data, a response rate of 93.3%. The other four were simply absent that day - there were no other exclusion criteria.

Intervention

The *When Drugs Speak* activity ran for 30 minutes across two phases. In the first ten minutes, students revised their chosen ASM independently using their own notes or textbooks. In the remaining 20 minutes, they wrote - in any format they liked - a first-person narrative from that drug's perspective, working in its mechanism of action, indications, adverse effects, and pharmacokinetic quirks. We deliberately left the format open: students could write a love letter, a poem, a short story, a travel

itinerary, a dating profile, whatever suited them. Nothing was graded, and the activity carried no marks. A short, optional sharing of selected narratives closed the session.

Quantitative strand: data collection and analysis

Right after the session, students completed a short Google Form with six yes/no questions: did they prefer this to traditional revision; did they feel it improved their retention; did it increase their interest in pharmacology; did it break the monotony of revision; did it improve their conceptual understanding; and would they want it included periodically in the curriculum. We designed this instrument to capture immediate impressions of acceptability and perceived usefulness - not as a measure of actual learning. We've tried to be consistent about framing these as perception data throughout the paper. Responses were summarised as frequencies and percentages.

Qualitative strand: data collection and analysis

All 56 handwritten narratives were collected, scanned, and kept as a complete set. We approached the qualitative analysis in two stages.

First, cohort-level rubric assessment. We used a six-domain rubric - conceptual accuracy, mechanism integration, clinical relevance, creativity and narrative voice, adverse effect anchoring, and reflective depth - to get an overall sense of submission quality (rated High / Moderate-High / Moderate). The full rubric, with descriptors for each domain, is provided as Additional file 3.

Second, inductive thematic analysis. Two investigators (DCM and KJ) worked through Braun and Clarke's six-phase framework.[9] We familiarised ourselves with all 56 submissions, generated initial codes across the dataset, searched for themes by grouping related codes, reviewed those themes against the data, and then named and refined them into a final thematic structure. The first three phases were done independently; we then met to compare and resolve differences through discussion. A third investigator (DN) checked the final themes against the coded data. We did not calculate a formal inter-rater reliability coefficient - consensus discussion was our main approach to rigour here, which is consistent with how Braun and Clarke frame reflexive thematic analysis; they specifically argue against treating reliability coefficients as a marker of qualitative validity.[10]

Reflexivity and positionality

One thing worth being upfront about: the lead investigator (DCM) both designed this activity and took part in the analysis. We tried to manage this through regular discussion between the two main analysts and independent verification by a third investigator, and DCM kept a reflexive journal noting assumptions and expectations going into the analysis.

Integration

To bring the two strands together, we built a Joint Display: for each matched quantitative-qualitative pair, the table shows the survey percentage, the corresponding theme, a representative student excerpt, and a short note on how the two pieces relate - whether they converge or whether the qualitative data expand on the quantitative finding.[8] From this display we also drew out a single meta-inference, representing something that only becomes visible once both strands are read together.

Results

Participation and submission formats

56 of the 60 enrolled students took part, and all 56 returned complete feedback forms and narratives - a 100% submission rate among participants. Phenytoin was the most popular drug choice, followed by Valproate and Carbamazepine. The range of formats students chose was striking: love letters, dramatic monologues, illustrated comic-strip character profiles, dating-app-style profiles, travel itineraries, dialogue scripts set in a clinic, and narrative poems all appeared. We took this variety as a rough proxy for how much creative freedom students actually exercised.

Quantitative findings: student perception feedback

Table 1 shows the survey results. 54 of 56 students (96.4%) said they preferred the activity to conventional revision; the same number (96.4%) felt their retention had improved, and the same again (96.4%) said it broke the monotony of revision. 52 students (92.9%) reported increased interest in pharmacology, and the same number (92.9%) recommended including the activity periodically. The domain with the lowest endorsement was perceived conceptual understanding, at 85.7% (48 of 56) - still high, but notably lower than the rest. We read this gap as a sign that students were discriminating between domains rather than simply rating everything positively.

Table 1
Quantitative strand: student perception feedback (n = 56; 100% submission rate)

Feedback item	Yes, n (%)	No, n (%)
Preferred over traditional revision	54 (96.4%)	2 (3.6%)
Perceived improved retention	54 (96.4%)	2 (3.6%)
Reported increased interest in pharmacology	52 (92.9%)	4 (7.1%)
Reported effective monotony-breaking	54 (96.4%)	2 (3.6%)
Perceived improved conceptual understanding	48 (85.7%)	8 (14.3%)
Recommended periodic curriculum inclusion	52 (92.9%)	4 (7.1%)

Qualitative findings: rubric-based cohort assessment

Overall, the rubric scores were strong. Conceptual accuracy came out High - most submissions correctly described mechanism of action, key indications, and the clinically important adverse effects. Mechanism integration was also High: students didn't just list mechanisms, they translated them into how the 'character' behaved in the story. Adverse effect anchoring through emotion or humour was, across the board, the most consistently strong domain. Clinical relevance landed Moderate-to-High, with pharmacokinetic detail standing out as the weakest and most variably handled area. Creativity and narrative voice were rated High - unsurprising given the format diversity described above - while reflective depth came out Moderate overall.

Qualitative findings: thematic analysis

Coding 56 submissions produced 22 initial codes, which we grouped into four broader categories and eventually five themes (Table 2).

Table 2
Qualitative strand: coding structure - initial codes, analytical categories, final themes, and rubric domain linkages

Representative initial codes	Analytical category	Theme	Rubric domains linked
Drug introducing itself; personality traits attributed; relationship metaphors; drug compared to person with strengths and flaws	Drug identity & personification	<i>T1: The drug became a character</i>	Conceptual accuracy; Creativity & narrative voice
MOA as narrative action; channel inhibition as 'controlling love'; travel metaphors for pharmacokinetics; prodrug as sibling relationship	Mechanism-based storytelling	<i>T2: Mechanism moved from textbook to story</i>	Mechanism integration; Conceptual accuracy
ADRs as character flaws; warnings as relationship cautions; humour about cosmetic ADRs; emotional gravity around teratogenicity	ADR anchoring through emotion & humour	<i>T3: Adverse effects as memorable warnings</i>	Adverse effect anchoring; Clinical relevance
Indications as 'strengths'; contraindications as 'deal-breakers'; interactions as toxic relationships; dosing in story logic	Clinical reasoning via narrative	<i>T4: Narrative promoted clinical reasoning</i>	Clinical relevance; Mechanism integration
Active authorship; sense of ownership; emotional engagement with content; revision described as enjoyable and memorable	Learner ownership & affective engagement	<i>T5: Creativity transformed revision into ownership</i>	Reflective depth; Creativity & narrative voice
<i>ADR, adverse drug reaction; MOA, mechanism of action.</i>			

Theme 1: *The drug became a character.*

Across the cohort, students gave their chosen drugs personalities, emotional registers, even relationships - and almost every trait could be traced back to a pharmacological property. Phenytoin appeared as 'lovely, at the time ruthless'; Carbamazepine showed up as a 'boyfriend', with the pharmacokinetic interaction between the two drugs reframed as a supportive relationship. None of this felt arbitrary; the personification tracked the pharmacology fairly closely.

"I'm your Phenytoin - lovely, at the time ruthless. I can become your stability, your calmness, your peace. But remember, I'm always honest with you." - Student 3, narrative poem

Theme 2: Mechanism moved from textbook to story.

Mechanisms that would normally sit as passive bullet points turned into things the 'character' did. Phenytoin's sodium channel blockade became 'working sincerely'; its high protein binding became 'you can't get rid of me easily'; its erratic, non-linear kinetics turned into a travel guide full of unpredictable detours. Getting there required students to actually understand the mechanism well enough to dramatise it - closer to comprehension than recall.

Theme 3: Adverse effects as memorable warnings.

Visible cosmetic side effects - hirsutism, gum overgrowth, acne, purple glove syndrome - came through with real vividness, often with a dark sense of humour. Teratogenicity, in particular, was handled with explicit warnings aimed at specific groups of patients, which suggests students were spontaneously placing the pharmacology in a clinical safety context without being told to.

"I am a very evil person. If you don't treat me properly, I can make your face ugly by excessive hair growth... Teenage girls - Beware of ME. I don't like babies, either." - Student 8, Phenytoin letter-monologue

Theme 4: Narrative promoted clinical reasoning.

A number of submissions slipped into prescribing logic without any prompting - indications framed as 'strengths', contraindications as 'deal-breakers', drug interactions as 'incompatible relationships', dosing woven into the relational story. We hadn't built this into the activity design; it emerged on its own.

"You don't want children and using OCPs - don't take me. You can't take me along with Warfarin." - Student 6, Phenytoin profile

Theme 5: Creativity transformed revision into ownership.

Students repeatedly described the activity as a different kind of revision altogether - one where they felt some ownership over the material. Choosing a format, constructing a voice, getting the pharmacology right in a way that was also entertaining - this seemed to shift students from passively receiving content to actively producing something with it.

"Saving thousands of people's lives every day makes me remember you and your fantastic functions till eternity." - Student 10, Phenytoin love letter

Joint Display integration

Table 3 lays out the Joint Display. Across all five pairings, the qualitative themes tended to add explanatory depth to the survey findings rather than just echoing them - what we've called an expansion relationship. The clearest example is the conceptual understanding item: at 85.7%, it was the lowest-scoring domain, and the qualitative data help explain why. Students' improvement seemed concentrated in mechanism integration and clinical reasoning, while pharmacokinetic detail lagged behind - a distinction the binary survey item alone couldn't have shown us.

Table 3

Joint Display: integration of quantitative and qualitative findings (exploratory convergent parallel mixed-methods design)

Quantitative finding (% endorsing)	Qualitative theme	Representative student voice	Integration statement (convergence/expansion)
96.4% perceived improved retention	T3: Adverse effects as memorable warnings	<i>"Teenage girls - Beware of ME. I don't like babies, either." (Student 8)</i>	Expansion: Quantitative data show broadly endorsed perceived retention improvement. Qualitative data reveal the specific mechanism - emotionally and humorously anchored adverse effect recall in clinically contextualised form - an established elaborative encoding pathway. Actual retention was not measured.
85.7% perceived improved conceptual understanding	T2: Mechanism moved from textbook to story	<i>"I like proteins, so I will bind to them in a higher percentage - you can't get rid of me easily." (Student 8)</i>	Expansion with qualification: The 85.7% endorsement (lowest domain) reflects genuine student self-assessment discrimination. Qualitative data show perceived improvement concentrated in mechanism integration and clinical reasoning; pharmacokinetic detail was variable - a nuance the binary item alone could not reveal.
96.4% preferred over traditional revision	T5: Creativity transformed revision into ownership	<i>"Saving thousands of people's lives every day makes me remember you and your fantastic functions till eternity." (Student 10)</i>	Convergence: High preference endorsement aligns strongly with Theme 5. Qualitative data identify the underlying construct - intrinsic motivation generated by creative autonomy and active production, consistent with self-determination theory.
92.9% reported increased interest in pharmacology	T1: The drug became a character	<i>"I'm your Phenytoin - lovely, at the time ruthless. I can become your stability, your calmness, your peace." (Student 3)</i>	Convergence: High interest endorsement aligns with Theme 1. Qualitative data explain the engagement mechanism - drug personalisation creates a relational emotional connection, potentially reducing affective barriers to pharmacology learning.
92.9% recommended periodic curriculum inclusion	T4: Narrative promoted clinical reasoning	<i>"You don't want children and using OCPs - don't take me. You can't take me along with Warfarin." (Student 6)</i>	Expansion: Curriculum inclusion recommendation reflects student recognition of clinical value. Qualitative data reveal students' narratives spontaneously mirrored a prescribing decision framework - indications as strengths, contraindications as deal-breakers, interactions as incompatibilities - suggesting perceived clinical transferability.
ADR, adverse drug reaction; OCP, oral contraceptive pill; MOA, mechanism of action.			

Meta-inference

Putting both strands together, our overall reading is that writing first-person about a drug seems to pull on three things at once: retrieval practice (pulling facts out of memory to use them), elaborative encoding (wrapping those facts in an emotional or narrative context), and narrative schema-building (reorganising scattered facts into something with a coherent shape). That three of these mechanisms appear together, and that the perceived benefits show up broadly across the survey items, suggests this isn't just a novelty effect - though we can't rule that out entirely. The exception is pharmacokinetics: narrative framing seems to be a weaker fit for quantitative and kinetic detail than for mechanism, adverse effects, or clinical reasoning, and that has a fairly direct implication for how the activity might be used in practice.

Discussion

This exploratory study set out to gauge whether a short, structured, first-person writing activity would be feasible, acceptable to students, and perceived as useful for learning ASM pharmacology. Bringing the survey and the thematic data together helped us go a bit further than either strand could on its own, pointing to plausible reasons behind the consistently positive feedback.

Take retention. 96.4% of students felt their retention had improved, and this lines up neatly with Theme 3 - adverse effects rendered as memorable warnings. Adverse effects are usually the part of pharmacology students struggle most to retain,[11] yet here they were the most vividly handled domain in almost every submission. The tones used - dramatic warnings, alarm directed at particular patient groups, dark humour about cosmetic effects - are exactly the kind of emotionally-loaded encoding that the literature links to better long-term recall.[4] That gives a plausible mechanism for the perceived retention gain. We should be clear, though: we didn't test retention at any delayed point, so this remains an inference rather than a measured outcome.

The conceptual understanding item told a more interesting story. At 85.7%, it was both the lowest-scoring item and arguably the hardest for students to self-assess honestly. It maps onto Theme 2 - mechanism moved from textbook to story. Writing convincingly about a drug's own mechanism, in its voice, is by definition an act of comprehension rather than memorisation; it requires pulling the right facts out and rearranging them so the story makes sense, which sits at the higher end of Bloom's taxonomy.[1] But the qualitative data also showed where the gains were concentrated - mechanism and clinical reasoning came through strongly, pharmacokinetics less so - and that's a nuance the binary survey question simply couldn't capture on its own.

High preference for the activity (96.4%) connects to Theme 5 - creativity as ownership - and fits reasonably well with self-determination theory.[12] Contemporary motivation theory in medical education similarly emphasises learner value, autonomy, competence, and social context as important determinants of engagement.[13] In our activity, students had autonomy in choosing their format, a

sense of competence from producing something pharmacologically sound, and relatedness through the optional sharing at the end. The active-production element also resembles retrieval-based learning, in which generating information is central to learning.[14] The increase in interest (92.9%) lines up with Theme 1: turning a drug into a character with a personality seems to have created an emotional connection with the content that might, for some students, lower the usual affective barrier to engaging with pharmacology.[6]

The curriculum-inclusion recommendation (92.9%) is best explained by Theme 4. What stood out here was how often students slipped into prescribing-style logic on their own - indications as strengths, contraindications as deal-breakers, interactions as incompatibilities - without us asking them to. That kind of spontaneous reasoning structure looks relevant to competency-based curricula that try to build clinical reasoning alongside factual knowledge.[15]

One finding deserves its own paragraph: pharmacokinetic detail came through less consistently than everything else. Narrative metaphor seems to work well for mechanism, adverse effects, and clinical logic, but less well for numbers and kinetic parameters. This is a fairly concrete, practical takeaway - if this activity is used as a stand-alone revision tool, it probably needs to be paired with something else to cover pharmacokinetics properly, particularly to manage the intrinsic cognitive load of quantitative and kinetic concepts.[16]

Transferability and international applicability

We ran this at a single institution in India, so some caution about generalisability is warranted. That said, several features of the activity suggest it could travel well. It needs no technology, no special infrastructure, no particular facilitator training, and fits inside a normal 30-minute teaching slot. It is not tied to any particular language - our students wrote in English, but there is no reason the activity could not run in another language. It is not tied to ASMs either; any drug class could be the subject. And because nothing is graded, it does not interact with assessment systems in any way that would need local adaptation. The underlying mechanisms we have discussed - retrieval practice, elaborative encoding, and self-determination theory - are not specific to Indian medical education; they have been studied across a wide range of educational and cultural settings.[3, 4, 12] The activity also uses a strength-focused, student-centred framing that is compatible with appreciative inquiry perspectives in medical education.[17] We would expect the activity to transfer reasonably well to medicine, nursing, pharmacy, and allied health programmes elsewhere, though multi-site replication would be needed to say that with any confidence.

Limitations

Several limitations need to be kept in mind when reading these results. This was a single-centre, single-cohort, single-session study with no comparison group, so nothing here demonstrates causal improvement in learning. All the quantitative data are immediate self-perceptions collected right after the activity - they're vulnerable to novelty effects, social desirability, and we have no baseline to compare

against. The binary yes/no format, while practical for a first feasibility pass, can't distinguish between someone who felt a small improvement and someone who felt a large one. Most importantly, the item we've labelled 'perceived improvement in retention' is really measuring how salient something felt immediately afterwards, not whether it was actually retained - we didn't do any delayed testing. There's also the matter of the lead investigator both designing the activity and being involved in the analysis; we tried to manage this through co-analyst discussion and a third reviewer, and through a reflexive journal, but it can't be eliminated entirely. We didn't calculate an inter-rater reliability statistic, relying instead on consensus discussion, in line with how Braun and Clarke frame reflexive thematic analysis - they argue against using such coefficients as markers of quality in this kind of work.[10] And finally, this was a new activity for these students, so some of the positive response may simply reflect novelty rather than anything more durable - something that later implementations with the same cohort, or different cohorts, could help clarify. Future work should aim for multi-site replication, delayed and objective retention testing, validated feedback scales with a pre-post design, and independent qualitative coding.

Conclusions

Overall, a short, structured, first-person creative writing activity appears feasible to run, costs nothing, and was well received by students in this cohort, who reported high engagement and self-perceived learning benefit. The Joint Display brought out specific mechanisms - emotionally and humorously anchored adverse-effect recall, mechanism-driven comprehension, and spontaneous clinical reasoning - that may help explain why, and these aren't mechanisms that passive revision typically engages. Pharmacokinetic content came through less reliably and would likely need extra reinforcement if this activity is used on its own. Given how little it costs to run, how well grounded it is in existing learning theory, and the breadth of positive student response, we think it's worth evaluating further - ideally across multiple sites, with objective outcome measures and some follow-up over time.

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Ethics Committee for Observational Studies (IEC-OS), JIPMER, Puducherry (Approval No. JIP/IEC-OS/2024/628; dated 08 May 2025). Written informed consent was obtained from all participants. All methods were performed in accordance with the relevant guidelines and regulations, including the Declaration of Helsinki.

Consent for publication

All student narrative excerpts quoted in this article are fully anonymised and attributed only as 'Student [n]'. Participants consented to the use of anonymised narrative excerpts for research publication purposes.

Competing interests

No potential conflict of interest relevant to this article was reported by any of the authors.

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Author Contribution

Authors' contributions
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All authors read and approved the final manuscript.

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Availability of data and materials

The anonymised quantitative feedback dataset (binary response frequencies) is available from the corresponding author on reasonable request. Handwritten student narrative submissions are securely archived at JIPMER Karaikal; access to de-identified narratives is available to reviewers and editors upon written request to the corresponding author. Full unrestricted public deposit is not feasible due to the potential for identification of participants through handwriting patterns and institutional context, despite anonymisation of attributions.

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