Self-awareness before graduation: Multimodal feedback on final-year medical students

D Hussain,[1]* BS (Biology), BA (Criminology), 3rd-year medical student; **A N Caglar,**[1]* BS (Biochemistry), 3rd-year medical student; **M Ballejos,**[2] PhD, MPA; **A Clithero-Eridon,**[2] PhD, MBA

[1] *University of New Mexico School of Medicine, Albuquerque, NM, USA*
[2] *Department of Family and Community Medicine, University of New Mexico School of Medicine, Albuquerque, NM, USA*
* *Co-first authors*

Corresponding author: *A Clithero-Eridon (aclithero@salud.unm.edu)*

Background. Medical students are routinely evaluated through standardised measures to ensure competency in various areas, including clinical, behavioural and communication skills. Patient feedback and self-assessment can complement traditional evaluations to enhance clinical skills; however, there is a paucity of research on how students utilise multimodal feedback to guide improvement.
Objectives. To provide insights into the effect of multimodal feedback on students' identification of performance gaps and development of improvement strategies.
Methods. This study retrospectively reviewed preceptor evaluations and compared them with self-evaluations of 4th-year medical students for a required course at the University of New Mexico School of Medicine (UNM SOM). As part of the student assessment assignment, students were required to obtain feedback from three patients using the Patients' Feedback in Clinical Practice questionnaire. The data were entered into REDCap, a secure database hosted by UNM SOM, and a thematic analysis of preceptors' and student narratives was conducted.
Results. Eighty-six students completed the course between June 2024 and April 2025. Three students did not complete the self-assessment assignment, resulting in 97% of the assignments being analysed. Scores for both preceptors and students ranged from 3 to 5. The mean scores were 4.8 for preceptors and 4.7 for student self-evaluations. Twenty-six students collected patient evaluations (31%). Not every student was able to complete this portion of the assignment owing to clinic limitations. Patient feedback ratings ranged from 2.3 to 5.0.
Conclusion. Incorporating patient feedback fosters self-evaluation, reveals blind spots, and strengthens clinical competence.

Keywords. Assessment, feedback, medical students, medical student education, performance improvement.

Undergraduate Res Health 2026;4(1):e4129. https://doi.org/10.7196/URHJ.2026.v4i1.4129

Aysu Caglar is currently a third-year medical student at the University of New Mexico, where she also did a degree in biochemistry. She plans to pursue a career in family and community medicine, where she hopes to provide patient-centred care and support the health of diverse communities. In addition, she aspires to serve as a mentor to future medical students and help guide the next generation of physicians.
Dua Hussain is currently a third-year medical student at the University of New Mexico. Her interests lie in rural medicine and women's health, with a focus on expanding access to care for underserved populations. She is passionate about patient-provider advocacy, and through research and community involvement, she hopes to keep learning, stay curious, and grow alongside her peers.

Medical students continuously refine their clinical, behavioural and communication skills to ensure competency across these areas. Standardised measurements include exams, written assignments, case presentations, and performance on objective standardised clinical exams. Evaluations also come from direct preceptor observation or via standardised patients. For many medical students, feedback is an essential tool that provides constructive criticism, motivating them to acquire new skills and apply their knowledge in future endeavours.[1] Two additional avenues of assessment, patient feedback and self-assessment of clinical performance, can be used simultaneously to enhance students' clinical competence and decision-making skills. Limited research exists on how medical students assess their performance and identify areas for improvement using multimodal feedback.

It is rare for medical schools to systematically solicit patient feedback on the care provided by medical students. Patient-centred feedback is a valuable component of medical education, as it adds an important dimension to the overall feedback process. This type of feedback is often encouraging and positive. However, it has not been recognised as an actionable learning tool in current medical education curricula. The state of New Mexico in the USA faces long-standing healthcare disparities such as communication barriers and decreased health literacy driven by geographical isolation and provider shortages, among other factors. These disparities underscore the need for patient-centred feedback tools that are culturally adaptable and able to capture the nuanced experiences of diverse populations. Adapting existing instruments to New Mexico's context could help identify gaps in communication and clinical skills development relevant to training future physicians. In our literature review, we identified only one school, the Karolinska Institute in Stockholm, Sweden, that collects patient-centred feedback.[2,3] They created and used the Patients' Feedback in Clinical Practice (PFCP) questionnaire. The PFCP questionnaire demonstrates that the patient feedback mechanism positively influences students. Findings include promoting self-confidence in clinical practice, facilitating a self-directed and reflective learning process, applying patient-centredness, and recognising collaborative awareness, all of which are important in clinical care.[4]

Self-assessment is an essential and often overlooked aspect in developing students' metacognitive abilities, self-efficacy, and a mastery-orientated approach to learning. Self-assessment is '… a process by which students 1) monitor and evaluate the quality of their thinking and behavior when learning and 2) identify strategies that improve their understanding and skills'.[5] Self-assessments can be used to bridge gaps in how feedback aligns with the most essential aspect of education: the student's satisfaction with their performance. Without an emphasis on self-assessment, the medical education curriculum is incomplete. As students progress in their training, their verbal, critical thinking and professional skills continue to develop, and self-assessment plays a key role in that growth. However, students rarely have opportunities to self-reflect and evaluate themselves against these criteria, which hinders their self-understanding. Our research question was 'How do final-year medical students use multimodal feedback to assess their performance and identify areas for improvement?' This study provides new evidence on how external feedback sources can improve self-assessment accuracy. The study demonstrates that patient feedback serves as a 'calibrating' influence on student self-assessment, potentially addressing one of medical education's persistent challenges: helping students develop accurate self-evaluation skills critical for lifelong learning and patient safety.

At the University of New Mexico School of Medicine (UNM SOM), all final-year medical students are required to complete a 4-week course titled 'Medicine in New Mexico' (MNM). Two of the objectives of this course, and pertinent to this study, are for students to: *(i)* improve skills in their area of specialty; and *(ii)* demonstrate adult learning by identifying personal learning needs. This study aimed to provide insights into the effects of multimodal feedback on students' identification of performance gaps and the development of improvement strategies.

Methods

Using a qualitative analytical approach, we retrospectively reviewed preceptors' final grades and compared them with 4th-year medical students' self-evaluations in the MNM course. As part of the self-evaluation assignment, students were required to obtain feedback from three patients using the PFCP questionnaire.

Sample

The sample consisted of three groups. The first group comprised final-year medical students who completed the required MNM course; each student was assigned a preceptor. The second group was the preceptors, who provided the students' final grades. The third group was patients. Students were asked to collect anonymous feedback from three patients using the PFCP questionnaire, when permitted by their preceptor and the clinical or hospital setting.

Data collection

We collected student data from the assessment assignment and preceptor evaluations from routine course grading. Both used the same rubric: Outstanding (well above expectations, exceptional initiative, 5 points); Good (above satisfactory, 4 points); Satisfactory (meets expectations, 3 points); Incomplete (below standard, rarely meets expectations, 2 points); and Fail (below standard, unacceptable, 1 point). We compared the final grade that students assigned themselves, based on patient feedback and self-reflection, with their preceptor's final evaluations of their performance, since the preceptors' final grades were not available to the students until after the course ended. The preceptor's final grade of Outstanding, Good, Satisfactory, Incomplete or Fail was accompanied by a narrative evaluation of the student's performance.

We made minimal modifications to the PFCP questionnaire for this study, removing one question, which resulted in 18 Likert-scale items. Patient feedback was not used to inform a student's final grade; students were therefore encouraged to seek input from a variety of patients. The self-assessment assignment used this prompt:

> 'On the last day, evaluate yourself. What grade do you think you earned for your clinical work? Why (including what the patients said about you)? What grade do you think you earned for your homework? Why (think about timeliness, quality, accuracy, effort, thoroughness, etc.)? If you rate yourself lower than an outstanding, what could you have done better?'

Data analysis

We entered data into REDCap, a secure database hosted by the UNM SOM.[6] We provide frequencies for descriptive purposes. Thematic analysis of preceptor and student narratives was conducted by authors DH and ANC, using inductive coding, with oversight provided by an

experienced qualitative researcher, AC-E. Coding was conducted solely on student narratives, as our focus was on students' ability to reflect on their performance using patient feedback and self-reflection, without preceptor input, to minimise bias in their self-assessments. We coded narratives according to the personal characteristics that students identified as important factors in their performance. A consensus approach was employed to reconcile any discrepancies.

Ethical considerations

We received written permission to use and modify the PFCP questionnaire from the first author of the PFCP articles.[2,3]

The University of New Mexico Human Research Review and Protection Committee approved this study (ref. no. HRRC#24-220).

Results

Eighty-six students completed the MNM course between June 2024 and April 2025. Three students did not complete the self-assessment assignment, leaving 97% of the assignments analysed. Twenty-six of the 83 students (31%) collected three patient evaluations each, for a total of 78. A 100% response rate was not achievable, as many clinics, including psychiatry, street medicine and pathology, were unsuitable for this assignment. Patient feedback scores per question ranged from 2.3 to 5.0 (Table 1). We received 86 preceptor grades.

Most students had average patient scores of 3 or higher; two students (8%) scored below 3. Some struggled to explain medical reasoning clearly to patients.

Preceptor feedback and student self-reflections

Preceptors' and students' scores ranged from 3 to 5, with mean scores of 4.8 and 4.7, respectively. When examining correlations among self-assessments, patient feedback and preceptor scores, most students rated themselves within one grade of their preceptor's rating. Those who received patient evaluations were more likely to rate themselves accurately (closer to the preceptor's score). Some students rated themselves lower than their preceptors did.

Students earning an 'outstanding' preceptor grade often received specific, actionable feedback highlighting strong clinical skills and knowledge, excellent patient rapport, proactive, self-directed learning, and teamwork/professionalism. Students rated 'good' or 'satisfactory' received vague feedback and were noted to have knowledge gaps and procedural challenges.

The student self-evaluations centered on several themes, as set out in Table 2.

Students who received preceptor scores of 'outstanding' tended to demonstrate proactive, self-directed learning in self-evaluations, evidenced by conducting readings, researching patients, and practising procedures outside of clinic time. Moreover, student narratives revealed that those who engaged in critical self-reflection, such as recognising their gaps in addressing barriers or language disparities, were more likely to identify systemic inequities that affect care.

Discussion

This study implemented a unique three-way assessment system combining student self-evaluation, preceptor evaluation, and patient feedback. While previous research has primarily focused on patient feedback tools such as the PFCP questionnaire developed at the Karolinska Institute, this is one of the first studies to integrate all three sources and systematically examine their correlations. Unlike most studies that focus on earlier-year students or residents, this research specifically examined final-year medical students preparing for independent practice. The timing is critical, because these students are developing the self-assessment skills they will need as practising physicians.

McMillan and Hearn[5] highlight that effective self-assessment promotes awareness, motivation and achievement. A particularly novel finding is that students who received patient evaluations were more likely to rate themselves accurately (closer to the preceptor's score). This parallels previous research demonstrating that external feedback scores, especially patient perspectives, function as valuable 'calibrators' of self-evaluation accuracy.[7,8] Of the two students with patient scores below three, one reflected directly on the issue that had resulted in the low score, while the other demonstrated only partial insight, suggesting a gap between perceived and actual performance. This pattern reflects well-documented challenges in learners' self-assessment accuracy, as they often require coaching to interpret feedback effectively.[8]

Students with lower ratings often struggled with procedural skills, consistent with workplace learning challenges and Bjorklund *et al.*'s[2] findings linking patient-identified procedural skill gaps to preceptor evaluations. Together, these results underscore the value of multimodal feedback and suggest that simulations or structured clinical reasoning workshops would be useful to address gaps. Literature on multimodal feedback indicates that when patient feedback is combined with faculty guidance, students make more meaningful behavioural changes and show improved patient-centred communication.[9,10] Multisource feedback programmes that include patient feedback can also effectively improve medical students' consultation skills.[11,12] Students who applied patient feedback demonstrated stronger patient-centred communication and cultural humility, aligning with studies linking multiple-source feedback to improved patient-centred skills.[11] Patients in our study often praised students for making them feel heard, emphasising the value of direct patient input. These positive reactions echo previous PFCP studies showing that patients value respect, active listening, and shared decision-making, reinforcing the idea that patient feedback captures aspects of the encounter that preceptors may not directly observe.[2-4]

However, patient evaluations revealed a need for structured training in health literacy, particularly in explaining questions, treatments, and symptoms requiring further care. The study identifies a unique educational opportunity: patient evaluations revealed students' struggles with health literacy communication, particularly 'explaining questions, treatments, and symptoms'. Health literacy studies show that patients often leave clinical encounters without understanding their diagnoses or treatment plans.[13] This feedback provides a concrete pathway for curriculum improvement that is rarely captured in traditional assessments. Patients are often hesitant to ask additional questions or admit a lack of understanding, because of power dynamics, embarrassment or language barriers.[13] One evidence-based method to mitigate this is the teach-back technique, which can improve comprehension, decrease errors, and increase adherence to treatment plans.[13,14] Another strategy used in New Mexico is the *salida*, a distinctive 'exit interview' conducted by community health workers (CHWs). A *salida* offers patients a safe way to communicate with their healthcare provider through trained personnel in

Table 1. Patient feedback on student performance

Question	Minimum average score*	Maximum average score	Average
Did you have the opportunity to explain the reason for your visit or what had happened since you last visited the doctor?	3.7	5.0	4.7
Did you have the opportunity to explain your own thoughts regarding your problems?	3.7	5.0	4.7
Did you have the opportunity to explain if there was something that worried you regarding your problems?	4.0	5.0	4.7
Did you have the opportunity to express if there was something specific you wanted to be performed/initiated during the consultation?	3.7	5.0	4.5
Did the student confirm with you that he/she/they understood your cause of concern correctly by summarising what you told him/her/them?	3.3	5.0	4.6
Did the student explain his/her/their medical questions so you understood why they were asked?	2.7	5.0	4.5
Did the student explain why certain examinations were performed during the clinical examination?	2.7	5.0	4.4
Did the student consider your thoughts regarding your problem when you discussed the follow-up plan/treatment?	3.0	5.0	4.6
Did you receive information/explanation from the student that made it possible for you to participate in the planning of care/treatment?	3.0	5.0	4.6
Did the student provide information about suggested care/treatment in a way you understood?	2.3	5.0	4.6
Did the student provide information about medication in a way that you understood?	3.0	5.0	4.5
Did the student provide information regarding symptoms that call for immediate contact with healthcare in a way you understood?	2.7	5.0	4.4
Did you have the opportunity to bring up questions you had before the visit regarding your cause of concern?	3.7	5.0	4.6
Did the student involve you in decision-making regarding your care/treatment?	3.3	5.0	4.6
Were you involved in the decision-making process regarding your care/treatment to the extent you wanted?	3.3	5.0	4.6
Are you satisfied with the initial plan that was decided upon together with the student?	4.0	5.0	4.7
Did you experience that the student treated you with compassion and consideration?	4.0	5.0	4.9
Did you experience that the student treated you with respect and dignity?	4.0	5.0	4.9

The Patients' Feedback in Clinical Practice questionnaire[2] is scored as follows: 1 = strongly disagree; 2 = disagree; 3 = neither agree or disagree; 4 = agree; 5 = strongly agree.

Table 2. Key characteristics with representative quotes illustrating each theme

Humility	'I was told by the team members who witnessed my interactions that I brought the utmost professionalism, humility, and openness to learning about people's different life circumstances. I admitted to the initial discomforts I felt in working with people experiencing homelessness, and where those discomforts came from, so that I could learn how to mitigate those better to continue providing the high-quality care that ALL of our patients deserve.'
Initiative	'I was impressed by my willingness to jump into patient encounters, even when I felt unprepared, and give it my best shot.'
Informed of barriers	'Although my patient interactions in the cath lab were limited, I effectively assisted in explaining these complex procedures to Spanish-speaking patients. These patients greatly appreciated having the procedures explained in their native language, which enhanced their comprehension and understanding after initially hearing it from an interpreter by another doctor.'
Patient-centred care	'Regarding my patient assessments, I believe the reason for my higher rating is that I consistently prioritised patients' concerns during my morning prerounds or whenever I saw them. I made a point to address their concerns before moving on to my routine questions for rounds. Additionally, I followed up later to ensure those concerns had been properly addressed. If they hadn't, I took steps to either resolve the issue myself or involve the appropriate staff to help address the patient's needs.'
Awareness	'I believe the normalisation of long working hours and the overwork in medical training can create a culture where burnout is pervasive. The expectation to prioritise the patient at the expense of personal wellbeing can be a cause of mental exhaustion and dissatisfaction with the career.'
Independence	'I was able to accomplish my stated goals of independently seeing all the patients in the clinic, but I surpassed my goals of participating in exams and imaging by completing all exams independently.'

their community. CHWs meet with patients prior to discharge to ensure that the patient has no remaining questions. If there are questions, the CHW obtains clarification from the provider, and together they provide clarification. Research shows that CHWs improve patient comprehension, trust and follow-through, particularly in communities with literacy or language barriers.[15] Integrating CHW-based communication support into medical education may therefore enhance the impact of patient feedback by helping students understand how real patients interpret their communication beyond the clinical room.

This is the first study to adapt the Swedish PFCP questionnaire for use in a US medical school setting, with a focus on addressing healthcare disparities in New Mexico. The mention of the '*salida*' (CHW exit interview) represents innovative thinking about how patient feedback can be enhanced through cultural adaptation. Incorporating CHWs into feedback loops aligns with equity-orientated educational frameworks that emphasise community partnership, cultural responsiveness, and shared power in clinical encounters.

Conclusion

This study demonstrates that incorporating patient feedback alongside student self-assessment and preceptor evaluation provides a more accurate and comprehensive understanding of final-year medical students' performance. Patient evaluations identified consistent interpersonal strengths while highlighting communication gaps directly relevant to patient safety and health literacy. Students who collected patient feedback demonstrated improved accuracy in self-assessment, suggesting that patient perspectives function as a valuable tool prior to the transition to residency. Educationally, these findings support integrating structured patient evaluations into routine undergraduate medical education, especially in programmes serving diverse or underserved communities. When paired with guided reflection and preceptor feedback, patients can help learners identify blind spots and improve patient-centred communication skills. Implementing multimodal assessment has the potential to develop culturally responsive future physicians.

> 'The ability to assess your competence – the ultimate purpose of evaluation is to have students become self-evaluating. If students graduate from our schools still dependent on others to tell them when they are adequate, good, or excellent, then we have missed the whole point of what education is about.'[16]

Declaration. The research for this original study was conducted by the student authors for their scholarly project requirement as part of their undergraduate medical education training.

Acknowledgements. None.

AI declaration. The authors acknowledge the journal policy on the use of AI, and the requirement to disclose the use of any AI tools in manuscript preparation. No AI tools were used.

Author contributions. All the authors have read and approved this manuscript. The requirements for authorship have been met, and each author believes that the manuscript represents their honest work.

Funding. This project was supported by an award from the National Center for Advancing Translational Sciences, National Institutes of Health, under grant number UL1TR001449.

Data availability statement. The data sets generated and analysed during the current study are available from the corresponding author (AC-E) upon reasonable request.

Conflicts of interest. None.

1. Burgess A, van Diggele C, Roberts C, Mellis C. Feedback in the clinical setting. BMC Med Educ 2020;20(Suppl 2):460. https://doi.org/10.1186/s12909-020-02280-5
2. Björklund K, Stenfors T, Nilsson GH, Alinaghizadeh H. Let's ask the patient – composition and validation of a questionnaire for patients' feedback to medical students. BMC Med Educ 2021;21(1):269. https://doi.org/10.1186/s12909-021-02683-y
3. Björklund K, Stenfors T, Nilsson GH, Leanderson C. Multisource feedback in medical students' workplace learning in primary health care. BMC Med Educ 2022;22(1):401. https://doi.org/10.1186/s12909-022-03468-7
4. Björklund K, Stenfors T, Nilsson G, Leanderson C. Learning from patients' written feedback: Medical students' experiences. Int J Med Educ 2022;13:19-27. https://doi.org/10.5116/ijme.61d5.8706
5. McMillan JH, Hearn J. Student self-assessment: The key to stronger student motivation and higher achievement. Educational Horizons, Fall 2008. https://files.eric.ed.gov/fulltext/EJ815370.pdf (accessed 21 March 2026).
6. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) – a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform 2009;42(2):377-381. https://doi.org/10.1016/j.jbi.2008.08.010
7. Natesan S, Jordan J, Sheng A, et al. Feedback in medical education: An evidence-based guide to best practices from the Council of Residency Directors in Emergency Medicine. West J Emerg Med 2023;24(3):479-494. https://doi.org/10.5811/westjem.56544
8. Eva KW, Regehr G. Self-assessment in the health professions: A reformulation and research agenda. Acad Med 2005;80(10 Suppl):S46-S54. https://doi.org/10.1097/00001888-200510001-00015
9. Engerer C, Berberat PO, Dinkel A, Rudolph B, Sattel H, Wuensch A. Specific feedback makes medical students better communicators. BMC Med Educ 2019;19(1):51. https://doi.org/10.1186/s12909-019-1470-9
10. Dubosh NM, Hall MM, Novack V, Shafat T, Shapiro NI, Ullman EA. A multimodal curriculum with patient feedback to improve medical student communication: Pilot study. West J Emerg Med 2019;21(1):115-121. https://doi.org/10.5811/westjem.2018.11.44318.
11. Lai MMY, Roberts N, Mohebbi M, Martin J. A randomised controlled trial of feedback to improve patient satisfaction and consultation skills in medical students. BMC Med Educ 2020;20(1):277. https://doi.org/10.1186/s12909-020-02171-9
12. Sattler AL, Merrell SB, Lin SY, Schillinger E. Actual and standardized patient evaluations of medical students' skills. Fam Med 2017;49(7):548-552.
13. Talevski J, Wong Shee A, Rasmussen B, Kemp G, Beauchamp A. Teach-back: A systematic review of implementation and impacts. PLoS ONE 2020;15(4):e0231350. https://doi.org/10.1371/journal.pone.0231350
14. Tamura-Lis W. Teach-back for quality education and patient safety. Urol Nurs 2013;33(6):267-271, 298.
15. Lehmann U, Sanders D. Community health workers: What do we know about them? The state of the evidence, activities, costs and impact on health outcomes of using community health workers. World Health Organization, January 2007. https://chwcentral.org/wp-content/uploads/2013/07/Community-Health-Workers-What-do-we-know-about-them.pdf (accessed 21 March 2026.
16. Boud D. Implementing student self-assessment. Sydney: Higher Education Research and Development Society of Australasia, 1986.

Received 23 August 2025. Accepted 29 January 2026.