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Interventions for improving medical students' feedback literacy: a protocol for a systematic review

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ADMINISTRATIVE INFORMATION

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Review stage at the time of initial registration - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 November 2026 and was last updated on 27 November 2026.

INTRODUCTION

Review question / Objective This systematic review aims to identify, describe and synthesise the evidence on educational interventions designed to improve the feedback literacy of medical students.
The review question was defined using the PICOS framework.
Population: medical students (medical undergraduates) at any stage of their programme.
Intervention: any educational intervention whose stated aim, at least in part, is to develop or improve student feedback literacy or any of its four features (appreciating feedback, making judgements, managing affect and taking action) as defined by Carless and Boud (1). The feedback provider may be a teacher or faculty member, a peer, a patient or another healthcare worker.
Comparator: not applicable; studies with or without a comparison group are eligible.
Outcome: feedback literacy or any of its features.
Study design: quantitative, qualitative and mixed-methods primary studies.
The review will address the following questions:
1. What are the characteristics of the interventions reported in the included studies?
2. Which features of feedback literacy are most frequently targeted, and what associated changes or learning experiences have been reported in the included studies?

Rationale Feedback is regarded as an important means of improving learner performance in medical education (2). However, providing feedback does not guarantee that learners use it: learners' emotional reactions to feedback and their limited ability to assess their own performance can prevent feedback from being accepted and acted upon (3). How learners receive feedback is therefore as important as how educators deliver it. Among undergraduate medical learners, receptiveness to feedback is influenced by the students' own characteristics as well as by the content of the feedback, the credibility of the educator and the learning environment (4).

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These observations have shifted attention from feedback as information transmitted by teachers towards feedback as a process in which learners play an active part. Carless and Boud define student feedback literacy as the understandings, capacities and dispositions that learners need to make sense of feedback information and use it to improve their work or learning strategies, and describe four inter-related features: appreciating feedback, making judgements, managing affect and taking action (1). The concept has since been elaborated into a learning-centred framework (5) and applied to health professions education, where it has been argued that learners should be explicitly prepared to engage with feedback during clinical placements (6, 7).

Educational interventions intended to develop these capabilities in medical students, such as workshops on seeking or receiving feedback, coaching, peer-feedback training, video-assisted reflection and longitudinal curricula, have been reported. The evidence is, however, scattered across different study designs, settings and outcome measures, which makes it difficult for educators to judge what has been tried, which features of feedback literacy have been addressed and how much confidence can be placed in the findings.

Existing reviews do not fill this gap. A scoping review of interventions to improve students' feedback literacy covered higher education in general and was not specific to medicine (8). In medical education, one scoping review mapped the factors that influence undergraduate learners' receptiveness to feedback and noted that feedback literacy was still a rarely used term (4); another, limited to skills and strategies for feedback reception among medical learners, identified only six studies (9); and a third examined feedback literacy among residents rather than students (10). A systematic review appraised instruments that measure feedback literacy in health professions students, not interventions to develop it (11). Medical students learn in a distinctive feedback environment, much of it workplace-based and involving supervisors, peers and patients, so findings from other disciplines or from postgraduate trainees cannot be assumed to apply to them. To our knowledge, no systematic review has synthesised interventions for improving medical students' feedback literacy across its four features together with an appraisal of the methodological quality of the evidence.

This review will therefore identify the interventions that have been evaluated, map them to the four features of feedback literacy, summarise the reported outcomes and appraise the quality of the included studies. The findings are intended to help medical educators and institutions to design, select and implement interventions, and to identify gaps, including under-addressed features and modes of delivery, that future intervention studies should address.

Condition being studied This review concerns student feedback literacy in undergraduate medical education. Feedback literacy refers to the understandings, capacities and dispositions that learners need in order to make sense of feedback information and use it to improve their work or learning strategies (1). Carless and Boud describe four inter-related features of a feedback-literate student (1):

(i) appreciating feedback: valuing feedback and recognising the learner's own active role in feedback processes;

(ii) making judgements: being able to evaluate the quality of one's own work and the work of others;

(iii) managing affect: handling the emotions that feedback can provoke, particularly when it is critical, so that it is not met with defensiveness;

(iv) taking action: using feedback information to improve subsequent work or performance.

This conceptualisation reflects a move away from viewing feedback as information delivered by teachers towards viewing it as a process in which learners seek, interpret and use information from different sources (5). In medical education, feedback arises in classroom, simulation and clinical workplace settings, and may come from teachers, clinical supervisors, peers, patients and other health professionals (6). Students therefore need feedback literacy in order to benefit from feedback across these settings.

For the purposes of this review, constructs that describe the student's role in the feedback process and correspond to one or more of the four features (for example feedback-seeking behaviour, receptiveness to feedback, feedback orientation, and the ability to judge one's own or peers' performance) are treated as features of feedback literacy, even where the original authors did not use the term "feedback literacy". A previous systematic review of feedback literacy instruments took the same approach (11). Interventions directed only at teachers' skills in giving feedback are outside the scope of this review.

METHODS

Search strategy Six electronic databases were searched : Web of Science (Clarivate), MEDLINE (EBSCOhost), CINAHL Complete (EBSCOhost), Education Research Complete (EBSCOhost) and Psychology and Behavioral Sciences Collection (EBSCOhost). Search terms were chosen

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according to the PICO framework and grouped into three concepts (population, intervention and outcome), which were combined with the Boolean operator AND. The population search terms are consistent with those used in a previous review of educational interventions for undergraduate medical students (12). The outcome terms were taken from a previous systematic review of feedback literacy instruments (11), and the intervention terms were utilized from two published search strategies (13, 14). In addition, a pilot search was conducted to identify keywords that could retrieve research studies discussing feedback literacy or any of its features, regardless of publication year. The search string for each database is as follows:

Scopus - (TITLE-ABS-KEY ("medical student*" OR "medical undergraduate*") AND TITLE-ABS-KEY ("feedback literacy" OR "feedback recepti*" OR "feedback receiv*" OR "receiving feedback" OR "feedback orientation" OR "feedback perception" OR "perception of feedback" OR "feedback conception" OR "feedback seeking" OR "feedback behavio*" OR "feedback attitude" OR "feedback culture" OR "feedback dialogue" OR "feedback acceptance" OR "perspectives of feedback" OR "feedback perspectives" OR "feedback practice") AND TITLE-ABS-KEY (education* OR train* OR program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR lecture* OR symposi* OR course* OR educational activities OR training program OR learning OR teaching OR teaching strategy OR teaching methods)) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SRCTYPE , "j"))

Web of Science - ((TOPIC=("medical student*" OR "medical undergraduate*")) AND TOPIC=("feedback literacy" OR "feedback recepti*" OR "feedback receiv*" OR "receiving feedback" OR "feedback orientation" OR "feedback perception" OR "perception of feedback" OR "feedback conception" OR "feedback seeking" OR "feedback behavio*" OR "feedback attitude" OR "feedback culture" OR "feedback dialogue" OR "feedback acceptance" OR "perspectives of feedback" OR "feedback perspectives" OR "feedback practice")) AND TOPIC=(education* OR train* OR program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR lecture* OR symposi* OR course* OR educational activities OR training program OR learning OR teaching OR teaching strategy OR teaching methods) and Preprint Citation Index (Exclude – Database) and English (Languages) and Article or Clinical Trial (Document Types)

CINAHL Complete - Title or Abstract - XB ("medical student*" OR "medical undergraduate*") AND Title or Abstract - XB ("feedback literacy" OR "feedback recepti*" OR "feedback receiv*" OR "receiving feedback" OR "feedback orientation" OR "feedback perception" OR "perception of feedback" OR "feedback conception" OR "feedback seeking" OR "feedback behavio*" OR "feedback attitude" OR "feedback culture" OR "feedback dialogue" OR "feedback acceptance" OR "perspectives of feedback" OR "feedback perspectives" OR "feedback practice") AND Title or Abstract - XB (education* OR train* OR program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR lecture* OR symposi* OR course* OR educational activities OR training program OR learning OR teaching OR teaching strategy OR teaching methods)

Expanders: Apply related words, Apply equivalent subjects

Limiters: English Language, Peer Reviewed

MEDLINE / Psychology and Behavioral Sciences Collection / Education Research Complete - Title or Abstract - XB ("medical student*" OR "medical undergraduate*") AND Title or Abstract - XB ("feedback literacy" OR "feedback recepti*" OR "feedback receiv*" OR "receiving feedback" OR "feedback orientation" OR "feedback perception" OR "perception of feedback" OR "feedback conception" OR "feedback seeking" OR "feedback behavio*" OR "feedback attitude" OR "feedback culture" OR "feedback dialogue" OR "feedback acceptance" OR "perspectives of feedback" OR "feedback perspectives" OR "feedback practice") AND Title or Abstract - XB (education* OR train* OR program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR lecture* OR symposi* OR course* OR educational activities OR training program OR learning OR teaching OR teaching strategy OR teaching methods)

Expanders: Apply related words, Apply equivalent subjects

Limiters: English Language, Peer Reviewed.

Participant or population Medical students (medical undergraduates) enrolled in a programme leading to a primary medical qualification, at any stage of training (pre-clinical or clinical) and in any country or type of institution. Studies that include medical students together with other learners (for example residents or students of other health professions) are eligible only if the findings for medical students are reported separately.

Intervention Any educational intervention whose stated aim, at least in part, is to develop or improve student feedback literacy or any of its four features (appreciating feedback, making

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judgements, managing affect and taking action) as defined by Carless and Boud (1). Interventions of any format (for example workshops, coaching, structured curricula, peer-feedback training or video-assisted reflection), duration, setting (classroom, simulation or clinical workplace) and mode of delivery (face-to-face, online or blended) are eligible. The feedback provider may be a teacher or faculty member, a clinical supervisor, a peer, a patient or another healthcare worker. Interventions that do not focus on the student's role in the feedback process, for example faculty development programmes aimed only at teachers' skills in giving feedback, are not eligible.

Comparator Not applicable. The review question does not require a comparator. Studies with any comparison group (for example usual teaching, no intervention or an alternative intervention) and studies without a comparison group (for example single-group pre-post studies, post-intervention surveys, qualitative studies and mixed-methods studies) are eligible.

Study designs to be included Original empirical studies of any design that evaluate an eligible intervention: quantitative studies (randomised controlled trials, non-randomised studies and quantitative descriptive studies), qualitative studies and mixed-methods studies. Reviews, editorials, commentaries, perspectives and other non-research publications are excluded.

Eligibility criteria A study is included if it meets all of the following criteria: (i) it involves medical students or medical undergraduates; (ii) it concerns an educational intervention intended to enhance or develop feedback literacy or any of its features; (iii) it reports outcomes related to feedback literacy or any of its features; (iv) it is an original study published in a peer-reviewed journal; and (v) it was published in any year (no date limits were applied).
A study is excluded if: (i) the intervention does not emphasise feedback literacy or its specific features (for example, feedback literacy is mentioned only briefly or is combined with unrelated constructs); (ii) it is not on the topic of enhancing or developing feedback literacy; (iii) the intervention does not focus on the student's role in the feedback process; (iv) it is published in a language other than English; (v) it is not a primary research article (for example a review, opinion piece, editorial or perspective); (vi) it is grey literature (for example a thesis, dissertation, unpublished report or conference presentation); or (vii) the full text is not available.

Information sources Electronic databases. Scopus (Elsevier), Web of Science (Clarivate), MEDLINE (EBSCOhost), CINAHL Complete (EBSCOhost), Education Research Complete (EBSCOhost) and Psychology and Behavioral Sciences Collection (EBSCOhost) were each searched through the Universiti Malaya Library.Manual searches by reference and citations checking will also be performed.

Main outcome(s) The present review will bring together educational interventions designed to improve medical students' feedback literacy or any of its features and the evidence of their effects. Outcomes measured quantitatively or qualitatively at any time after the intervention are eligible, and effects will be summarised as reported by the original authors, without statistical pooling. The main outcome of this review will assist medical educators and institutions in comparing the available interventions for improving feedback literacy.

Additional outcome(s) The present review will also describe :1.Characteristics of the interventions: aim, content, format, theoretical or conceptual basis, duration and intensity, feedback provider, setting, mode of delivery and the feature(s) of feedback literacy targeted. 2.Methodological quality of the included studies.3. Gaps in the literature and opportunities for future research.

Data management Two authors (Lyu X and Yun YC) performed the search by applying the search terms outlined above. After the search, the same two authors will remove duplicates and independently screen each study against the study selection criteria. Studies will first be screened on their titles, abstracts and keywords. If the authors agree that a study does not fulfil the criteria, it will not proceed to the next stage. If the authors consider that a study fulfils the criteria, or if they are unsure, it will proceed to the next stage, in which the full text will be screened. Studies that fulfil the criteria at this stage will be included in the review. If the two authors have differing opinions, a discussion will be held with the third author to reach a consensus on whether the study should be included.
Once an initial list of included studies has been prepared, the references cited in these studies will be searched manually to identify any missed studies (15). In addition, citation checking will be performed among the articles citing the included studies (16). Articles found through reference checking and citation checking will go through the same title, abstract, keyword and full-text

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screening, and the relevant ones will be added to give a refined list of studies for the review. The searches of the electronic databases will be repeated periodically to identify newly published studies, so that the review accounts for recent publications. The process will be reported using the PRISMA flowchart (17). Cohen's kappa will be used to assess inter-rater reliability after the first and second screenings (18).
Once the list of included studies has been agreed, the data needed to address the objectives of the review will be extracted from the included studies and presented in tables for ease of comparison. Relevant data include name of author, year of publication, country, study design, participants, characteristics of the intervention, feature(s) of feedback literacy targeted, outcome measures, main findings, and the rating on each criterion of the Mixed Methods Appraisal Tool (MMAT) (19, 20).

Quality assessment / Risk of bias analysis The methodological quality of each included study is appraised with the Mixed Methods Appraisal Tool (MMAT), version 2018 (19, 20), which was developed for systematic reviews that include qualitative, quantitative and mixed-methods studies. The MMAT comprises two screening questions and five criteria for each of five categories of study: qualitative studies, randomised controlled trials, non-randomised studies, quantitative descriptive studies and mixed-methods studies. Each study is assigned to a category using the MMAT algorithm, and each criterion is rated "Yes", "No" or "Can't tell". Mixed-methods studies are rated on the mixed-methods criteria and on the criteria for their qualitative and quantitative components. As recommended by the developers of the MMAT (19, 20), no overall quality score will be calculated and studies will not be classified as being of high, moderate or low quality. Instead, the rating of every criterion will be presented for each study, and the pattern of ratings across studies will be described. No study will be excluded because of its methodological quality; the appraisal will be used to interpret the findings of the review and to indicate how much confidence can be placed in them.
The two authors will use the MMAT algorithm to judge the methodological quality of the included studies, and any discordances will be resolved through discussions with the other authors. The quality appraisal stage will also be assessed with Cohen's kappa to ensure inter-rater reliability (18).

Strategy of data synthesis As the studies eligible for this review differ in design, intervention and outcome measures, the findings will be analysed by narrative synthesis, following the guidance of Popay and colleagues (21). Quantitative and qualitative findings will be synthesised separately and will not be merged. The included interventions will be compared on their characteristics, the features of feedback literacy they target and their reported outcomes, and these data will be summarised.

Subgroup analysis Not applicable.

Sensitivity analysis All studies that meet the eligibility criteria are included regardless of their methodological quality, and no study will be excluded on the basis of its MMAT ratings. Instead, the MMAT ratings will be reported for every study, and the robustness of each narrative synthesis will be considered by contrasting the findings of studies with and without important methodological limitations.

Language restriction Only studies published in English are eligible, and the database searches were limited to English-language publications.

Country(ies) involved Malaysia.

References
1. Carless D, Boud D. The development of student feedback literacy: enabling uptake of feedback. Assess Eval High Educ. 2018;43(8):1315-25. doi:10.1080/02602938.2018.1463354
2. Bing-You R, Hayes V, Varaklis K, Trowbridge R, Kemp H, McKelvy D. Feedback for learners in medical education: what is known? A scoping review. Acad Med. 2017;92(9):1346-54. doi:10.1097/ACM.0000000000001578
3. Bing-You RG, Trowbridge RL. Why medical educators may be failing at feedback. JAMA. 2009;302(12):1330-1. doi:10.1001/jama.2009.1393
4. Cordovani L, Tran C, Wong A, Jack SM, Monteiro S. Undergraduate learners' receptiveness to feedback in medical schools: a scoping review. Med Sci Educ. 2023;33(5):1253-69. doi:10.1007/s40670-023-01858-0
5. Molloy E, Boud D, Henderson M. Developing a learning-centred framework for feedback literacy. Assess Eval High Educ. 2020;45(4):527-40. doi:10.1080/02602938.2019.1667955
6. Noble C, Billett S, Armit L, et al. "It's yours to take": generating learner feedback literacy in the workplace. Adv Health Sci Educ Theory Pract. 2020;25(1):55-74. doi:10.1007/s10459-019-09905-5
7. Tripodi N, Feehan J, Wospil R, Vaughan B. Twelve tips for developing feedback literacy in health professions learners. Med Teach. 2021;43(8):960-5. doi:10.1080/0142159X.2020.1839035

Lyu et al. INPLASY protocol 2026110113. doi:10.37766/inplasy2026.11.0113 Downloaded from https://inplasy.com/inplasy-2026-11-0113/

8. Little T, Dawson P, Boud D, Tai J. Can students' feedback literacy be improved? A scoping review of interventions. Assess Eval High Educ. 2024;49(1):39-52. doi:10.1080/02602938.2023.2177613
9. Rowe J, Bouchard-Lamothe D, Haggerty T, et al. Optimizing feedback reception: a scoping review of skills and strategies for medical learners. Can Med Educ J. 2025;16(2):48-62. doi:10.36834/cmej.79722
10. Freeth A, Carr S. Beyond receiving: feedback literacy as a catalyst for resident growth, a scoping review. Med Educ Online. 2026;31(1):2722433. doi:10.1080/10872981.2026.2722433
11. Mohd Noor MN, Fatima S, Cockburn JG, et al. Systematic review of feedback literacy instruments for health professions students. Heliyon. 2024;10(10):e31070. doi:10.1016/j.heliyon.2024.e31070
12. Patel P, Kassam S. Evaluating nutrition education interventions for medical students: a rapid review. J Hum Nutr Diet. 2022;35(5):861-71. doi:10.1111/jhn.12972
13. De Rezende H, Vitorio AMF, Morais AS, et al. Effectiveness of educational interventions to develop patient safety knowledge, skills, behaviours and attitudes in undergraduate nursing students: a systematic review protocol. BMJ Open. 2022;12(3):e058888. doi:10.1136/bmjopen-2021-058888
14. Meinema JG, Buwalda N, van Etten-Jamaludin FS, Visser MRM, van Dijk N. Intervention descriptions in medical education: what can be improved? A systematic review and checklist. Acad Med. 2019;94(2):281-90. doi:10.1097/ACM.0000000000002428
15. Cook DA, West CP. Conducting systematic reviews in medical education: a stepwise approach. Med Educ. 2012;46(10):943-52. doi:10.1111/j.1365-2923.2012.04328.x
16. Wright K, Golder S, Rodriguez-Lopez R. Citation searching: a systematic review case study of multiple risk behaviour interventions. BMC Med Res Methodol. 2014;14:73. doi:10.1186/1471-2288-14-73
17. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. doi:10.1136/bmj.n71
18. McHugh ML. Interrater reliability: the kappa statistic. Biochem Med (Zagreb). 2012;22(3):276-82. doi:10.11613/BM.2012.031
19. Hong QN, Fàbregues S, Bartlett G, et al. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. Educ Inf. 2018;34(4):285-91. doi:10.3233/EFI-180221
20. Hong QN, Pluye P, Fàbregues S, et al. Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada; 2018.
21. Popay J, Roberts H, Sowden A, et al. Guidance on the conduct of narrative synthesis in systematic reviews: a product from the ESRC Methods Programme. Version 1. Lancaster: Lancaster University; 2006.

Keywords feedback literacy; medical students; undergraduate medical education; educational intervention; feedback; systematic review.

Dissemination plans The completed review will be submitted for publication in a peer-reviewed medical education journal.

Contributions of each author

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