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## Instruments measuring student feedback literacy in health professions education: A protocol for systematic review of psychometric properties

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## ADMINISTRATIVE INFORMATION

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**Review Stage at time of this submission** - Formal screening of search results against eligibility criteria.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202370008

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 July 2023 and was last updated on 03 July 2023.

## INTRODUCTION

**Review question / Objective** The proposed systematic review will address the following questions: 1. What are the instruments available to measure student feedback literacy amongst health professions education students? 2. What is the evidence available pertaining to the psychometric properties of student feedback literacy instruments among health professions education students?

**Rationale** The feedback process is essential to drive learning by helping learners gain awareness of their current performance, leading to different learning strategies for improvement of their knowledge, skills, and attitudes (1). In health professions education, feedback can be provided to facilitate awareness of a learners' knowledge and competency, in different experiential learning settings such as the workplace (2). However, the current standard practice of providing feedback pose several challenges, including the inability of

learners to understand feedback (3), learners incorrectly interpreting the feedback they receive (4), and learners having difficulty with regulating their emotions when faced with critical feedback (5). It is thought that a better understanding of the feedback process itself, also known as 'feedback literacy', may help to overcome some of these challenges of current feedback practices and increase effectiveness of the process itself.

The conceptualisation of feedback literacy provides a theoretical foundation for instruments to assess feedback literacy among learners to be developed and validated (6, 7). In addition, instruments are published in the literature which do not measure feedback literacy per se, but measure similar constructs that contain features of feedback literacy (8, 9). Despite using different terms with unique definitions, these instruments should still be reviewed as they generally aim to assess learners' behaviours and attitudes in the feedback process. Therefore, these concepts and instruments should be included in the discourse

around feedback literacy in a way to holistically review and develop feedback literacy instruments. As feedback, as a concept, is situated within the context of the learning environment and cultures (10), feedback literacy instruments should be defined for each discipline, namely health professions education. By doing so, health professions institutions will be able to better understand their current feedback processes and uptake by learners to decide if intervention is required to improve feedback literacy in their students. This is in line with suggestions from the literature calling for more research focusing on the development of interventional programs that aim to raise feedback literacy among learners (11, 12). Hence, these opportunities can assist health professions institutions in increasing their level of student feedback literacy and improving the efficiency of the feedback process.

To do this, existing and validated instruments should be identified and critiqued for use in a health professions education context, which will be done through systematic review of instruments that measure feedback literacy or similar constructs. The present review aims to identify available instruments measuring feedback literacy in the scientific literature, compare their psychometric properties, and synthesise a set of recommendations for health professions institutions planning to assess feedback literacy among their learners. In turn, institutions can use the results of the study to make evidence-informed decisions for selecting appropriate feedback literacy tools. The present review is guided on protocol by Cook and West (13).

**Condition being studied** This systematic review focuses on the current understandings of student feedback literacy. Feedback literacy is defined as an understanding, capacity, and disposition to process feedback information and apply it for improvement (11). Feedback literate learners are described by four features: someone who appreciates the feedback process, able to make judgments of their performance, and the feedback they receive. They can manage their emotions when faced with critical commentary, engage actively in making sense of information, use it to inform their later work, and take actions based on information (11).

Feedback literacy shifts the historical paradigm of feedback from a one-way delivery of instructor-derived perspectives into the contemporary paradigm, whereby feedback is a two-way process of communication between instructors and learners (3). Commonality between the old and new ideals of feedback is the ultimate goal of providing learners with an opportunity to gain

meaning to information acquired from multiple sources and utilise it to improve their performance or learning. However, it is now known that effective feedback requires cooperation between the learners and the feedback providers. Learners must discuss their performance with feedback providers and formulate necessary actions to improve their performance. These interactions help students use the feedback they receive and overcome certain issues reported in the feedback reception process (4, 14, 15). An active role in the feedback process may improve learners' appreciation of it. Learners will have more opportunities to clarify the feedback provided and obtain suggestions on how to act on these observations. Overall, these two-way dialogues aim to boost the effectiveness of the feedback process and encourage learners to utilise the feedback provided.

While the research literature is abundant with discussions of effective feedback in theory (11, 12), there is still a gap of how students can improve their participation in this process. Feedback literacy may potentially pioneer the effort to increase involvement of students in the feedback process. Thus, the present review will look into the existing definitions and tools available to measure and develop opportunities to overcome barriers with feedback literacy, particularly in the context of health professions education.

## METHODS

**Search strategy** The electronic databases included in the review were Web of Science, Scopus, Cumulative Index to Nursing and Allied Health Literature (CINAHL) Complete, Medline, Psychology and Behavioural Sciences Collection by EBSCO Host, and Education Research Complete by EBSCO Host. Selected keywords were chosen based on the PICO format with added synonyms or related terms based on previous research reviews or MeSH (Medical Subject Heading) terms to expand the reach of the electronic search. 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: Web of Science – (((TS=(*medic\** OR *health* OR *"health science"* OR *clinic\** OR *nurs\** OR *biomedic\** OR *pharma\** OR *nutrition* OR *dietetic\** OR *dental* OR *dentist\** OR *"allied health"* OR *"occupational health"* OR *"environmental health"* OR *"occupational therap\*\*"* OR *physiotherap\** OR *"phsyical therap\*\*"* OR *"speech therap\*\*"* OR *"speech language phatolog\*\*"* OR *"occupational safety"* OR *psycholog\** OR *audiolog\** OR *forensic\**

OR radiotherap\*) AND TS=("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 TS=(validit\* OR reliabilit\* OR sensitivit\* OR precision OR specificit\* OR responsiveness OR psychometri\* OR "coefficient of variation" OR "cognitive interview" OR comprehensi\* OR "factor analysis" OR "internal consistenc\*" OR "reproducibilit\*" OR Cronbach OR "structural equation model\*" OR "measurement invariance")) AND TS=(instrument\* OR measur\* OR test OR assessment OR evaluat\* OR tool OR questionnaire OR survey) and Preprint Citation Index (Exclude – Database) and Article (Document Types) and English (Languages)

Scopus – ( TITLE-ABS-KEY ( medic\* OR health OR "health science\*" OR clinic\* OR nurs\* OR biomedic\* OR pharma\* OR nutrition OR dietetic\* OR dental OR dentist\* OR "allied health" OR "occupational health" OR "environmental health" OR "occupational therap\*" OR physiotherap\* OR "phsyical therap\*" OR "speech therap\*" OR "speech language phatolog\*" OR "occupational safety" OR psycholog\* OR audiolog\* OR forensic\* OR radiotherap\* ) 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 ( validit\* OR reliabilit\* OR sensitivit\* OR precision OR specificit\* OR responsiveness OR psychometri\* OR "coefficient of variation" OR "cognitive interview" OR comprehensi\* OR "factor analysis" OR "internal consistenc\*" OR "reproducibilit\*" OR cronbach OR "structural equation model\*" OR "measurement invariance" ) AND TITLE-ABS-KEY ( instrument\* OR measur\* OR test OR assessment OR evaluat\* OR tool OR questionnaire OR survey ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) )

CINAHL Complete – TX ( medic\* OR health OR "health science\*" OR clinic\* OR nurs\* OR biomedic\* OR pharma\* OR nutrition OR dietetic\* OR dental OR dentist\* OR "allied health" OR

"occupational health" OR "environmental health" OR "occupational therap\*" OR physiotherap\* OR "phsyical therap\*" OR "speech therap\*" OR "speech language phatolog\*" OR "occupational safety" OR psycholog\* OR audiolog\* OR forensic\* OR radiotherap\* ) AND TX ( "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 TX ( validit\* OR reliabilit\* OR sensitivit\* OR precision OR specificit\* OR responsiveness OR psychometri\* OR "coefficient of variation" OR "cognitive interview" OR comprehensi\* OR "factor analysis" OR "internal consistenc\*" OR "reproducibilit\*" OR Cronbach OR "structural equation model\*" OR "measurement invariance" ) AND TX ( instrument\* OR measur\* OR test OR assessment OR evaluat\* OR tool OR questionnaire OR survey )

Expanders: Apply related words, Apply equivalent subjects

Limiters: English Language, Peer Reviewed, Research Article, Language: English, Publication Type: Journal Article

Medline / Psychology and Behavioral Sciences Collection / Education Research Complete – ( medic\* OR health OR "health science\*" OR clinic\* OR nurs\* OR biomedic\* OR pharma\* OR nutrition OR dietetic\* OR dental OR dentist\* OR "allied health" OR "occupational health" OR "environmental health" OR "occupational therap\*" OR physiotherap\* OR "phsyical therap\*" OR "speech therap\*" OR "speech language phatolog\*" OR "occupational safety" OR psycholog\* OR audiolog\* OR forensic\* OR radiotherap\* ) AND ( "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 ( validit\* OR reliabilit\* OR sensitivit\* OR precision OR specificit\* OR responsiveness OR psychometri\* OR "coefficient of variation" OR "cognitive interview" OR comprehensi\* OR "factor analysis" OR "internal consistenc\*" OR "reproducibilit\*" OR Cronbach OR "structural equation model\*" OR "measurement invariance" ) AND ( instrument\* OR measur\* OR test OR assessment OR evaluat\* OR tool OR questionnaire

OR survey )

Expanders: Apply related words, Apply equivalent subjects

Limiters: English Language, Human, Language: English, Scholarly (Peer Reviewed) Journals.

**Participant or population** Any students in the educational programs that result in a degree, certificate, or training necessary to be licensed to practice as a health professional, as required by state law, or continuing education necessary to retain state license or certification by a board in the individual's health profession specialty will be included in this study. These include, but are not limited to, medical, health sciences, nursing, biomedical, pharmacy, nutrition and dietetics, dentistry, allied health, physiotherapy, physical therapy, speech therapy, language pathologist, occupational safety, clinical psychology, audiology, forensics, and radiotherapy students.

**Intervention** The intervention for the present review is the same as the condition being studied which is feedback literacy. Any instrument that focuses on feedback literacy or any of its four features will be considered for inclusion in this review. The feedback provider can be either teachers, patients, healthcare workers or a peer.

**Comparator** The included studies will be compared based on their psychometric properties according to the COSMIN risk of bias checklist (16). The checklist comprises 10 boxes of measurement properties under three different headings and its subheadings: content validity (PROM development, content validity), internal structure (structural validity, internal consistency, and cross-cultural validity/measurement invariance), and remaining measurement properties (reliability, measurement error, criterion validity, and hypotheses testing for construct validity and responsiveness).

**Study designs to be included** The included studies will be original studies, including qualitative, quantitative, or mixed-method studies that describe the development and validation of a novel or adapted instrument. Study designs can be either observational or experimental. Review studies and non-research studies will be excluded.

**Eligibility criteria** A research article will be included if it is fulfilling the following criteria: (i) Research studies involving health professions education at different levels (undergraduate and postgraduate). (ii) Research studies developing instruments focusing on measurement of student feedback literacy or any of its features (regardless

of the feedback provider, e.g., teachers, patients, peers) including adaptations, replication studies and revalidation into a different context. (iii) Research studies developing instruments focusing on the role of students in the feedback process i.e., perspectives of students on the feedback process and/or behaviour of students during the feedback process. (iv) Research studies validating the instrument with at least one measurement property listed in the COSMIN risk of bias checklist (16). (v) Research studies published in a peer-reviewed journal. The exclusion criteria are as follows: (i) Research studies on instruments that do not focus on feedback literacy or any of its features (e.g., feedback literacy only mentioned in minor parts of the instrument and feedback literacy mixed with other constructs that are not related to the feedback process) (ii) Research studies developing instruments not focusing on the role of students in the feedback process e.g., teachers' perspectives on the feedback process. (iii) Research studies that are not validating their instruments or describing any of its psychometric properties. (iv) Research studies published in languages other than English. (v) Non-primary research articles such as editorials, perspectives, opinion pieces, or reviews. (vi) Gray literature such as unpublished dissertations, theses, and conference proceedings. (vii) Research articles with no full text available.

**Information sources** A systematic search will be conducted in electronic databases including Web of Science (WoS), Scopus, Cumulated Index to Nursing and Allied Health Literature (CINAHL) Complete, Medline, Psychology and Behavioral Sciences Collection by EBSCO Host and Education Research Complete by EBSCO Host. Manual searches by reference and citations checking will also be performed.

**Main outcome(s)** The present review will pool novel or adapted instruments measuring feedback literacy or any of its features and the evidence of their psychometric properties. The main outcome of this review will assist health professions institutions in comparing the available instruments that measure feedback literacy.

**Additional outcome(s)** The present review will also describe the utility of the instruments included. The utility will be described as the context for usage of tool, method of administration, accessibility of the tool, training requirements, and length or time taken to administer the tool. Other additional outcomes include the contextualization of feedback literacy,



constructs measured, gaps in the research literature and opportunities for future research.

**Data management** Two authors (NN and SF) performed the search by applying the previously outlined search terms. Once a search is performed with these keywords, the same two authors will remove possible duplicates and independently screen each study according to the study selection criteria. First, research studies were screened based on their titles, abstracts, and keywords. If the authors agree that a research study does not fulfil the criteria, it will not proceed to the following stage. If the authors deem a research study to fulfil the selection criteria, or if they are unsure, these research studies will proceed to the next screening stage. These studies will then be screened based on their full texts. Studies that fulfil these criteria will be included in the review. If the two authors have differing opinions, a discussion will be held with the other authors to resolve whether the research study should be included or not to reach a consensus. Once an initial list of included studies is prepared, a manual search of the references cited in these studies will be performed to identify any missed research studies (13). Additionally, citation checking will be performed amongst the research articles citing the included studies (17). Potential research articles found through reference checking and citation checking will go through the same process of title, abstract, keywords and full text screening. Consequently, relevant research studies identified through the search of references will be screened and included to draw a refined list of studies for the review. Repeat searches on the electronic databases will be performed periodically to search for newly published research studies and ensure that the present review accounts for all recent publications. The process will be reported using the PRISMA flowchart (18). Cohen's kappa will be assessed to ensure inter-rater reliability during the screening stages (19, 20). Inter-rater reliability was assessed after the first and second screenings. Once a confirmed list of studies is agreed upon, the included studies will be extracted for their relevant data to address the objectives of the present review. Data extracted will be presented in tables for ease of comparison. Relevant data includes name of author, year of publication, country, study discipline of population, name of instrument, novelty of instrument, type of feedback, and each of the ten measurement properties listed in the COSMIN risk of bias checklist (16). Utility of the included instruments will also be tabulated.

**Quality assessment / Risk of bias analysis** Each study included in the present review was appraised

for its methodological quality. The two reviewers (NN and SF) will adopt the checklist prepared by the Consensus-based Standards for the Selection of Health Measurement Instruments (COSMIN). The checklist was originally developed to appraise the methodological quality of single studies on the properties of Patient-Reported Outcome Measures (PROMs) (21) but has been adapted for exclusive use in systematic reviews of PROMs (16). Although the checklist was initially designed mainly for instruments targeting patients, it has been applied for systematic reviews on healthcare students and professionals (19, 22), higher education students in general (23), and the public (24).

This review adopts the COSMIN risk of bias checklist for systematic reviews of Patient-Reported Outcome Measures (16). The checklist comprises 10 boxes of measurement properties under three different headings and its subheadings: content validity (PROM development, content validity), internal structure (structural validity, internal consistency, and cross-cultural validity/measurement invariance), and remaining measurement properties (reliability, measurement error, criterion validity, and hypotheses testing for construct validity and responsiveness). Each box in the checklist contains multiple items rated individually as either very good, adequate, doubtful, inadequate, or not applicable. Based on the individual items in each box, the whole box will then be judged based on the good measurement properties to determine if the respective measurement properties are either sufficient, insufficient, or indeterminate. Next, the quality of evidence was graded as high, moderate, low, or very low based on the GRADE system. The two authors will use the COSMIN checklist 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.

**Strategy of data synthesis** As the review will most likely retrieve multiple instruments with different constructs, a narrative synthesis is planned to analyse the findings of the present review. Narrative synthesis has previously been applied to systematic reviews of psychometric properties (22, 23). The narrative synthesis will be conducted based on the guideline by Popay and colleagues (25). The instruments included in the present review will be compared based on their constructs and psychometric properties, and a summary of these data will be reported.

**Subgroup analysis** Not applicable.

**Sensitivity analysis** Any instruments that fulfil the eligibility criteria will be considered for the present review without discriminating them based on their methodological quality or risk of bias. Instead, the risk of bias of each included study will be reported and discussed in the present review as per the COSMIN risk of bias checklist (16).

**Language restriction** Only primary research studies and instruments published in English will be considered in the present review.

**Country(ies) involved** Malaysia.

**Keywords** Student Feedback Literacy; Health Professions education; COSMIN Risk of bias; Systematic Psychometric Review; Instruments.

**Dissemination plans** The systematic review will be published in a peer-reviewed academic journal.

#### Contributions of each author

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