Interventions for undergraduate and postgraduate medical learners with academic difficulties: a BEME systematic review

LACASSE M., AUDÉTAT M.-C., BOILEAU E., DUFOUR M.-H., LAFERRIÈRE M.-C., LAFLEUR A., LA RUE E., LEE S., NENDAZ M., PAQUETTE RAYNARD E., SIMARD C., STEINERT Y., THÉORET J.

Review citation
Miriam Lacasse, Marie-Claude Audétat, Élisabeth Boileau, Nathalie Caire Fon, Marie-Hélène Dufour, Marie-Claude Laferrière, Alexandre Lafleur, Ève La Rue, Shirley Lee, Mathieu Nendaz, Emmanuelle Paquette Raynard, Caroline Simard, Yvonne Steinert & Johanne Théorêt (2019) Interventions for undergraduate and postgraduate medical learners with academic difficulties: A BEME systematic review: BEME guide no. 56, Medical Teacher, DOI: 10.1080/0142159X.2019.1596239

Review website
https://bemecollaboration.org/Published+Reviews/BEME+Guide+No+56/

Keywords
medical education, professional competence, learning difficulties, remedial teaching, teaching methods

Headline conclusions
This review provides a repertoire of 109 undergraduate and postgraduate literature-based interventions (24 strong, 48 moderate, 26 weak and 11 very weak recommendations) for teaching/learning, faculty development, and research purposes.

Background and context
Ten to fifteen percent of learners will experience difficulties during their medical training. Factors suggestive of academic difficulties during undergraduate or postgraduate medical training and educational diagnoses are well described in the medical education literature. However, clinical teachers often struggle to report unsatisfactory trainee performance, in part because they are not familiar with evidence-based remediation options (Yepes-Rios et al., 2016).

Two reviews about remediation interventions (Hauer et al., 2009; Cleland et al., 2013) stated that most interventions for learners experiencing academic difficulties do not appear to be based on explicit conceptual frameworks. Furthermore, most rely on expert advice and few appear to have been assessed; they also concluded that evidence was lacking to guide best practices to support medical learners with academic difficulties.

Review objectives
To identify interventions for undergraduate (UG) and postgraduate (PG) medical learners experiencing academic difficulties, to link them to a theory-based conceptual framework, and to provide literature-based recommendations around their use.

Review methodology
Search Strategy: This systematic review searched the MEDLINE, CINAHL, EMBASE, ERIC Education Source and PsycINFO databases combining the following concepts: 1) medical education, 2) professional competence or difficulty and 3) educational support. The literature was searched from January 1st 1990 to December 31st 2016.
Articles retrieved in previous reviews about remediation options in medical learning were added to the selection process. Relevant non-indexed journals were hand searched. In addition, three experts in the field were contacted by email to share any study results relevant to this review.

**Inclusion and Exclusion Criteria:** The authors included original research studies or innovation reports from a medical discipline, focusing on undergraduate students or postgraduate trainees in difficulty, describing at least one intervention strategy aimed at supporting learners with academic difficulties, and including at least one form of program evaluation. Articles were excluded if they were written in languages other than English, French, Spanish, German or Italian.

**Data Extraction:** For each article, the reviewers extracted data about:

- Behaviour change techniques groupings (Michie et al., 2015);
- Program evaluation and importance of outcomes, using Stufflebeam (2003)’s CIPP model (context/input/process/product) and a modified version of Kirkpatrick’s classification of training outcomes (Hammick et al., 2010);
- Effectiveness of outcomes;
- Quality appraisal of studies (using the Mixed Methods Appraisal Tool (Pluye et al., 2011).

**Data Synthesis:** Each type of intervention was mapped to the relevant educational diagnoses (knowledge, skills, attitudes, learner, teacher, and environment). The authors synthesized extracted evidence by adapting the GRADE approach (www.gradeworkinggroup.org) to formulate recommendations for each intervention (strong, moderate, weak and very weak).

**Implications for practice**

This review provides clinical teachers and educators with a repertoire of literature-based interventions to use for assessment, mentoring and faculty development purposes. It encourages the use of the most effective literature-based interventions to support undergraduate and postgraduate medical learners with academic difficulties, and helps identification of program evaluation gaps to stimulate further educational scholarship and research in the field. Further development of interventions for learners experiencing academic difficulties should build upon effective BCTs and test the unexplored ones. Scholarship efforts should also reinforce the importance of thorough program evaluation.

**References**


