

# **Protocol: Rapid review of developments in medical education in response to the COVID-19 pandemic: A BEME systematic review**

## Review Team

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## BACKGROUND

The novel coronavirus disease (Covid-19) is a highly contagious disease that was first reported in Wuhan, Hubei Province, China in December 2019. Within weeks of the emergence of the disease, it had spread to several countries and the World Health Organisation (WHO) declared the outbreak as a Public Health Emergency of International Concern in January 2020 and as a pandemic in March 2020 (1). According to the dashboard of the Center for Systems Science and Engineering at Johns Hopkins University, Baltimore, USA (2), the disease has been reported in 179 countries, affected over 800000 people worldwide and caused over 39000 deaths as at March 31, 2020.

Covid-19 is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), previously known as the 2019 novel coronavirus (2019-nCoV). SARS-Cov-2 is a novel member of coronaviruses which are a large class of highly diverse, enveloped, positive-sense, single-stranded RNA viruses (3). The impact globally on medical education has already been felt with huge numbers of campuses in lockdown (4), for example minimising social contact; physical distancing measures; requirements for protective clothing (PPE) for clinical encounters. This has meant teaching occurring in very different ways, assessments occurring in different ways or indeed being abandoned.

It is also clear that rapid developments have occurred to meet these challenges, with many examples of educational developments that have supported the continuation of studies and evolution of education.

The aim of this systematic review is to synthesise published reports of educational and assessment developments in response to the COVID-19 pandemic within medical education.

### Review Question

Our review will address educational developments

- What novel solutions or developments in medical education have been deployed in response to the COVID-19 pandemic and what lessons have been learned by the teams who have deployed them? (Description)
- What is the impact of these changes in response to the COVID-19 pandemic? ( Justification)

### Methods

Inclusion criteria:

- Studies describing developments that were explicitly deployed in response to COVID-19 within medical education
- Studies must be within medical education, undergraduate, postgraduate or CME
- Studies from 1<sup>st</sup> December 2019, when COVID-19 was first identified
- Any language will be considered

Exclusion criteria:

- Opinion pieces, call for change, editorials, needs assessments and other studies where no actual change has been deployed

- Studies that look at any development or method that was not explicitly deployed to respond to COVID-19
- Studies that have HCPs but no medics
- Studies that describe the development as a minor part of a larger package of planned measures.

### Search Terms

(coronavirus OR covid19 OR covid-19 OR SARS-Cov-2 OR 2019-nCoV) AND (Medical education OR undergraduate medical OR medical student OR medical school OR training OR continuing medical education OR postgraduate medical education OR assessment OR teaching OR evaluation OR interview OR recruitment OR distance learning OR examinations OR OSCE OR PPE OR clinical skills)

Meded publish

Google scholar

Databases – Electronic searches will be completed of Medline, Embase, CINAHL and Psycinfo searching titles and abstracts.

Pilot search – an initial pilot search was completed of the four key databases.

This found 1 relevant paper within every 10 citations and was deemed appropriate. An increased number of educational terms was added and this increased numbers, but did not increase capture of papers, so this strategy was kept.

### Data Extraction

Based on BEME Guidance (Hammick, Dornan and Steinert, 2010) and will report , we will devise and pilot a data extraction form to be completed within Microsoft Excel to allow quick review and sharing of extracted data.

Key items included will be:

- Problem to be solved or issues to address by development
- Setting and local context of education or assessment
- Description of intervention (for example: lesson plans, pedagogy, outcomes, resource, methods, link to materials)
- Risk of bias in reporting of above
- Outcome measures of study and results, characterised by Kirkpatrick's hierarchy
- Study design details (Methodology of evaluation of study intervention)
- Risk of bias as above
- Any lessons learned, difficulties, or directions for future work described

Extraction will again be completed by two authors independently and dispute resolved by involving a third and discussing until a full consensus can be reached.

### Quality Assessment

While many methods have been utilised, there is currently no consensus method within medical education systematic reviews to assess quality and judge risk of bias. The review team have decided

to align with the requirements in the STORIES statement (Gordon 2014). This highlights key items to be extracted and considered amongst primary studies within a high quality Systematic review in medical education. Quality will not in any way be linked to the level of outcome or forum of publication. Instead, this will only be used to categorise outcomes.

There are two major areas that will be considered and these are largely unrelated, yet both vital.

The first is the quality or risk of bias from the reporting of the intervention. This is to appraise for the reader of the review the quantity and quality of data presented that allows the actual intervention itself to be understood and potentially replicated. Poor reporting does not necessarily mean there is poor quality education, but it increases the risk of bias from poor reporting.

A visual RAG ranking system will be employed to judge the risk is for a number of items. Items will be judged to be of high quality (Green), Unclear quality (Yellow), low quality (Red). These will cover core areas of reporting (Gordon 2014). The items to be judged are shown in Table 2. These judgements will be made independently by AM and LH, with MG consulted if there is disagreement. No paper will be excluded based on this quality assessment.

The second is interventional study design. Given the huge variety of study types that are expected, rather than making judgements as to quality, the data will be extracted and presented to readers. However, if RCTs are found, the CONSORT statement will be used to judge reporting.

Table 2: Quality assessment of the interventions presented-

Bias source	High quality	Unclear quality	Low Quality
<b>Underpinning bias</b>	Clear and relevant description of theoretical models or conceptual frameworks that underpin the development	Some limited discussion of underpinning, with minimal interpretation in the context of the study	No mention of underpinning
<b>resource bias</b>	Clear description of the cost / time / resources needed for the development	Some limited description of resources	No mention of resources
<b>Setting bias</b>	Clear details of the educational context and learner characteristics of the study	Some description, but not significant as to support dissemination	No details of learner characteristics or setting
<b>Pedagogical bias</b>	Clear description of relevant pedagogy employed to support delivery	Some pedagogical alignment mentioned but limited detail as to how applied	No details of pedagogy
<b>Content bias</b>	Provision of detailed materials (or details of access)	Some elements of materials presented or summary information	No educational content presented

## Synthesis of evidence

### Narrative Summary (Description)

A descriptive analysis will take place, summarising the data from the extraction form, to focus on describing summary data regarding: need for development and problem to be solved, underpinning theory or frameworks guiding development, details of the change, Study type, setting and organisation of intervention, and outcomes of the primary study. Additionally, content related to the quality assessment indices will be extracted, including where relevant any additional content or appendices.

### Meta-analysis (Justification)

If suitably homogenous outcome data are presented which include any form of evaluation (considering educational and methodological heterogeneity as highlighted in the quality assessment), meta-analysis may be employed to consider the impact of the intervention using Kirkpatrick's hierarchy. We will group similar outcomes to allow for comparison. However, this is felt to be unlikely.

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