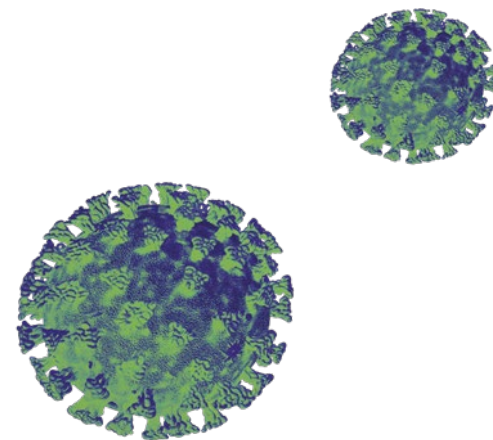


A rapid review of the effectiveness of alternative education delivery strategies for undergraduate and postgraduate medical, dental nursing and pharmacy education during the COVID-19 pandemic

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Question Background

- Traditional education delivery in higher education institutes has been **severely affected** by the COVID-19 pandemic.
- This has been a particular issue for **healthcare students** whose continuing education is **imperative** to maintain a well-educated healthcare workforce ready for practice.
- **Transition to emergency remote learning** has been implemented worldwide and a wide range of alternative education delivery strategies utilised, ranging from **blended programmes** (remote and classroom combined) to fully **remote learning**.
- Remote programmes vary from **synchronous** 'virtual classroom' approaches (resources delivered live, allowing for real time questions and student participation) to **asynchronous** (resources i.e. pre-recorded lectures etc available online for students to access whenever they like, as many times as they like).
- The aim of such strategies is to enable **efficient remote learning**, using digital tools to replace the in-person teaching environment
- In the context of COVID-19 it is important to be able to determine the **effectiveness** of these **alternative education delivery strategies**

Research Question

Participants:

- Undergraduate & postgraduate students
- Medicine, Nursing, Dentistry & Pharmacy

Intervention:

- Specific education delivery during COVID-19

Comparison:

- Education delivery prior to COVID 19

Outcomes:

- Knowledge, skills, confidence & competency

What is the effectiveness of alternative education delivery strategies for undergraduate and postgraduate medical, dental, nursing and pharmacy students during the COVID-19 pandemic?

Extent of the evidence

Dental Students (n=2)

Searches identified

- **1 comparative descriptive study**
- **1 single cohort study**

Nursing Students (n=3)

Searches identified

- **2 comparative descriptive studies**
- **1 single cohort descriptive study**

Medical Students (n=14)

Searches identified

- **5 comparative descriptive studies**
- **7 single cohort descriptive studies**
- **2 randomised controlled trials**

Pharmacy Students (n=4)

Searches identified

- **2 comparative descriptive studies**
- **2 single cohort studies**

Key Findings

Extent & recency of Evidence Base

- No relevant existing reviews were identified during the preliminary work so the review focused on **23 primary studies**, all in undergraduate education and none were UK-based
- Studies were a mix of:
 - Cohort /comparative descriptive studies of remote versus in-person learning (previous pre-COVID academic year or same academic year, 2019/20)
 - Randomised controlled trials comparing bespoke interactive online platforms with standard video format or textbook-based preparation
- Considerable variability between studies in terms of students, type of distance learning and platforms used, and outcome measures applied; most focused on knowledge gained
- Most studies were low or very low quality with small sample sizes
- All studies were published in 2020 – 2021

Key Findings

Evidence of effectiveness

Remote teaching was valued, and learning was achieved, but the **comparative effectiveness** of virtual versus in-person teaching is less clear

Medicine:

- Self-reported competency and confidence, and demonstrable suturing skills were achieved through participating in remote learning
- However, lower levels of knowledge (including exam results) were obtained by students who received virtual or blended learning compared to in-person teaching (low - very low confidence)
- Using bespoke interactive platforms in undergraduate medical training was superior to standard video (low confidence) or 'textbook' presentations (very low confidence)

Key Findings

Evidence of effectiveness

Dentistry:

- Remote learning led to knowledge gained (low confidence), but self-reported practical and interpersonal skills were lower with remote rather than in-person learning (very low confidence)

Nursing:

- Evidence indicated that knowledge improved regardless of whether the learning was conducted virtually or in-person pre COVID (low confidence)
- Confidence levels were higher when learning or assessment was conducted virtually compared to in-person (low confidence)
- Levels of competency were the same (very low confidence)

Key Findings

Evidence of effectiveness

Pharmacy:

- Virtual learning was associated with higher skills (in objective structured clinical examinations) but lower knowledge (exam scores) than in the pre-COVID cohort; self-reported competency and confidence scores were similar between the two groups (very low confidence)

Key Findings

The Best Quality Evidence

Randomised controlled trial of e-Learning module with interactive content vs standard video-based distance learning of the National Institutes of Health Stroke Scale to 5th year medical students (n=75) (Suppan et al. 2021) showed increased knowledge scores

Key Findings

Policy Implications

- Remote learning is appreciated by students and enabled continued teaching and learning in the short-term within the emergency circumstance
- Supplementary alternative or in-person practical sessions may be required post-emergency to address learning needs for some disadvantaged student groups
- The transition from the traditional into remote teaching methods seems to affect students' performance at exams, particularly for practical-based subjects in dentistry and medicine

Key Findings

Policy Implications continued..

- Available evidence is insufficient to demonstrate equivalence for other healthcare student speciality groups
- It is unclear whether planned remote teaching, rather than relying on emergency adaptation, would be more effective
- Further research with robust methods to evaluate alternative education delivery strategies is needed to inform policy decision-making in this area.

Limitations of the available evidence

Out of the 23 studies, none were conducted in the UK, all focused on undergraduates and the majority (n=21) were descriptive studies)

The 2 randomised controlled trial's evaluated different interventions so meta-analysis wasn't appropriate. Both studies also had small sample sizes and poor response rates

The majority of findings in this review were of a low or very low quality

Strengths of the review

- To our knowledge this is the first rapid review of the effectiveness of alternative education delivery strategies for undergraduate and postgraduate medical, dental and pharmacy education during the COVID 19 pandemic
- Data screening, data extraction and critical appraisal of each study were undertaken by different reviewers and then independently checked for accuracy and consistency by the same second reviewer

REsearch

GENEration

Assimilation

Transfer

EMBEDding

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Research Wales \(healthandcareresearchwales.org\)](https://healthandcareresearchwales.org)

The WC19EC and authors of this work declare that they have no conflict of interest.