BEME Spotlight 52

A Best Evidence Medical Education (BEME) systematic review of: What works best for health professions students using mobile (hand-held) devices for educational support on clinical placements? BEME Guide No. 52

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Review citation

Review website

https://bemecollaboration.org/Published+Reviews/BEME+Guide+No+52/

Keywords

mobile device; clinical placement; health professions student; undergraduate; clinical clerkship; hidden curriculum; informal curriculum

Headline conclusions

This idiosyncratic evidence-base of modest robustness suggested that mobile devices provide potentially powerful educational support on clinical placement, particularly with student transitions, metalearning, and care contribution. Explicit policy must tackle informal and hidden curricula though, addressing concerns about transgressions.

Background and context

Ingrained assumptions about clinical placements (clerkships) for health professions students pursuing primary basic qualifications might undermine best educational use of mobile devices. In this review we focus on evidence showing the best ways to use hand held devices for educational support on clinical placements

Review objectives

What works best for health professions students using mobile (hand-held) devices for educational support on clinical placements?

Implications for Practice

Educational practices should develop to make best use of mobile devices and the accompanying research must focus on how they support learning and patient care. The need for explicit policy to tackle informal and hidden curricula about how students should use mobile devices in this way is imperative.

Review methodology

Search Strategy: A scoping-exercise informed options for developing the main search. The main search-strategy used key-term variants within four domains:

> student-type (study population) and
> mobile (handheld) device ('intervention', but no comparison-group required) and
> clinical placement/workplace (setting of 'intervention') and
> learning outcome/activity (integral to that placement)

To check further for mobile devices, the search included 'telemedicine' and 'text message', but articles focused solely on these would be excluded. The search of Latin alphabet electronic databases spanned 1988-2016 (1988-2015 performed February 2016, supplemented in March 2017 with 2016 results), without language restrictions, in the sequence:

> MEDLINE, ERIC (Educational Resource Information Center), Web of Science (core collection), CINAHL (Cumulative Index to Nursing and Allied Health Literature), PsycInfo, Cochrane Central, Scopus.

Inclusion and Exclusion Criteria: The scoping-review used five inclusion-criteria to find primary reports of:
1. empirical studies (primary or secondary research) of primary or secondary data collection published as: peer-reviewed journal article, including structured or systematic review; grey literature such as conference-abstracts (to check for subsequent papers) or commissioned research featuring...
2. use of mobile device by...
> 3. health professions students on a programme for basic primary qualification...
> 4. on clinical placement/clerkship in the clinical setting/workplace...
> 5. to support their learning, including when integral to health care delivery

Editorials, opinion-pieces, commentary-reviews, news-items, letters, narrative literature reviews, conference-abstract-only 'publications' were excluded. Any of five criteria led to exclusion:
- no empirical study or insufficient detail to gauge against inclusion-criteria
- no use of mobile device, just desktop computing, 'SMS' texting, or other such telecommunications, e.g. telemedicine, videoconferencing
- health professions students studying for a post-basic/post-primary (advanced/postgraduate) qualification, e.g. 'graduate nursing students' on Master or doctoral research programmes (rather than other graduates now undertaking a basic nursing degree)
- classroom-based activity or simulated basic skills (e.g. insufficient detail about the simulated complex workplace)
- healthcare delivery only, unless student learning was integral to diagnosis or treatment (e.g. not just using mobile devices to record others' clinical practice in extracurricular audits)

Data Extraction: Using twenty articles, two reviewers piloted feasibility of data extraction for quality-assessment. Two reviewers then coded illustrative extracts of each article in the full data set (n=45) in NVivo for:
- device; broad use (inductively); research approach (quantitative; qualitative; mixed methods); aim; nature of participants and sampling; number of participants and response rate; year, country, and design/method of data collection; year of publication; findings and conclusions;
- K-level(s) and Maxwell dimensions of quality that relevant evidence supported;
- level of evidence (Harden et al. 1999): L1=professional judgement---the beliefs and values of experienced teachers; L2=educational principles; L3=professional experience; L4 adjusted to='empirical studies' short of L5/L6; L5=cohort studies and related methods; L6=randomized controlled trials;
- strength of evidence (grade) (Colthart et al. 2008; Hammick et al. 2010): 'S1=No clear conclusions can be drawn. Not significant. S2=Results ambiguous, but there appears to be a trend. S3=Conclusions can probably be based on the results. S4: Results are clear and very likely to be true. S5=Results are unequivocal.'
- other context, e.g. ethics approval, theoretical frameworks used

Data Synthesis: The primary evidence-base was summarized for the 'whom, when, and how' that mobile devices supported:
Content analysis:
- *characteristics of evidence: basic descriptive epidemiology (time, place, person)*
- *nature and robustness of evidence extracted: K-level(s) and Maxwell dimension(s); indicators of level and* strength
Thematic analysis:
- *main messages: inductively from representative extracts of quantitative and/or qualitative data*
- *main omissions and caveats: inductively*

The nature of the evidence precluded further synthesis beyond broad thematic analysis, but the overall approach was consistent with the pragmatism paradigm. To be included, systematic reviews had to double-code evidence from search-questions potentially capturing relevant evidence. All authors checked the narrative summaries against the evidence Implications for practice