

A pragmatic trial of blended learning versus online learning for clinically integrating Evidence Based Medicine teaching in an undergraduate medical school

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Background

- Multifaceted, clinically integrated teaching of Evidence Based Medicine (EBM) with assessments are more likely to improve students' knowledge, skills and attitudes ⁽¹⁻³⁾
- Currently, there is limited evidence on what are the minimum components of the multifaceted interventions or on the most effective models of clinically integrating EBM teaching

Aim

The aim of this study is to evaluate the effectiveness of two different models of clinically integrating EBM teaching – blended or online learning.

Methods

- EBM is a progressive longitudinal theme in the University of Buckingham Medical School (UBMS)
- Students are taught to ask, acquire and appraise evidence in years one and two (phase I)
- In years three and four (phase II), students are asked to apply EBM in clinical practice and where possible assess the impact and reflect on their experience

EBM curriculum in UBMS

Phase I		Phase II	
Year 1 12 weeks module	Year 2 12 weeks module	Year 3 Clinically integrated seminars	Year 4 Clinically integrated seminars
Teaching			
Formulating question as PICO	Literature searching with Cochrane –workshop	Clinically integrated teaching of EBM- in Cardiorespiratory, perioperative and primary care blocks	Clinically integrated teaching of EBM in acute medicine, child health and cancer blocks –
Literature searching using Medline and PsychInfo- workshop	Screening	Applying EBM in clinical practice	Applying and Assessing Impact of EBM in clinical practice
Epidemiological study designs	Health Economics	Students becoming peer teachers of EBM	Conference with submissions of educational prescriptions presented as posters
Critical Appraisal of epidemiological studies			Choosing EBM champions
Assessment			
Formative Presentation of a PICO question, search strategy for evidence and Critical appraisal of a chosen article	Formative Fresno Poster and oral presentation of a question, search strategy identifying 3-5 articles on the topic, critical appraisal and recommendations	Formative Completing ACE assessment tool at the end of public health seminars	Formative Submission of educational prescriptions as an SLE in e-Portfolio
Summative End of term short answer questions OSCE	Summative End of term short answer questions OSCE	Summative End of term short answer questions OSCE	Summative End of term short answer questions OSCE

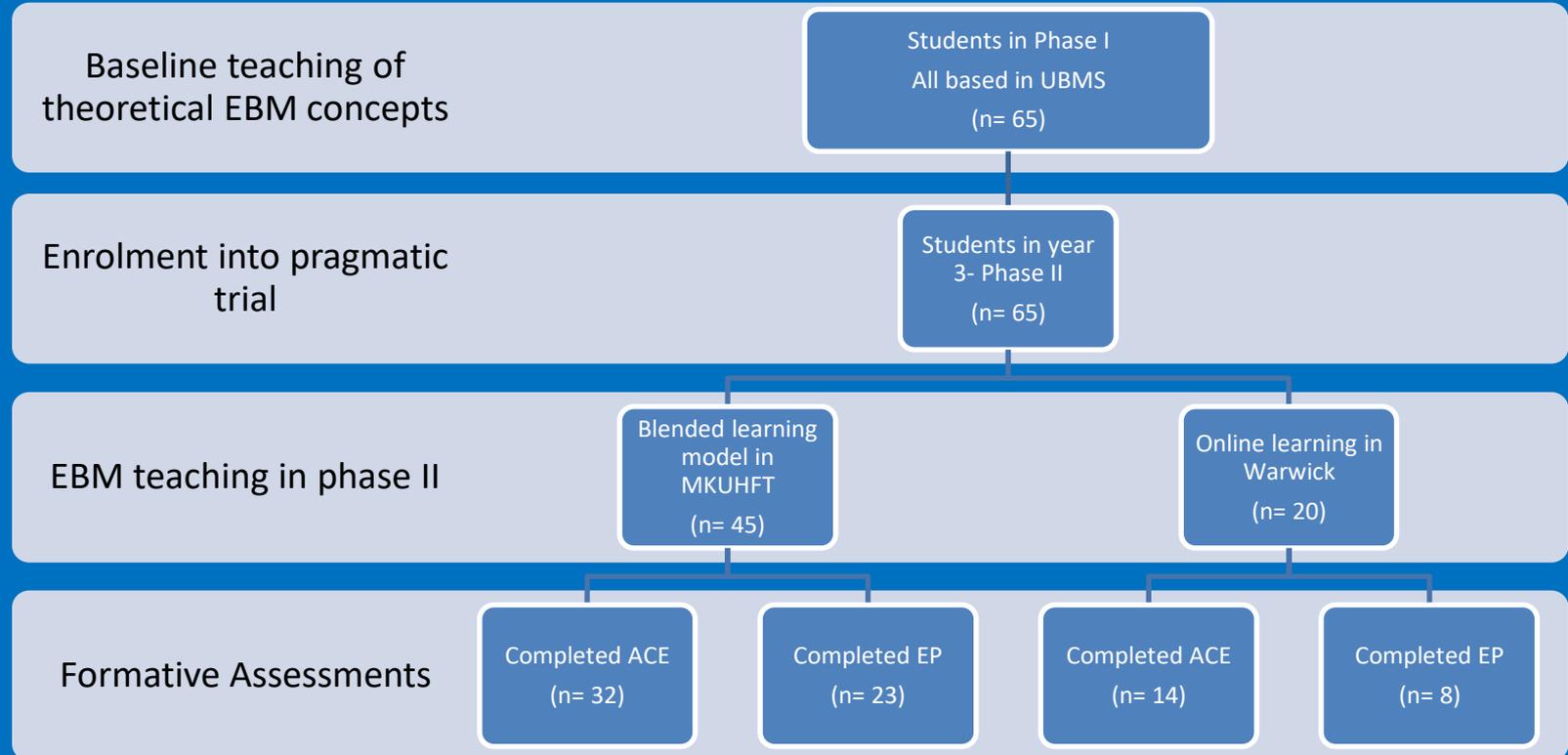
Methods contd...

- All students received the same educational intervention for phase I
- Students in phase II were placed at one of two hospitals, where they received either blended learning (a combination of lectures, facilitated small group discussions) or online learning (recorded lectures and online learning resources)

Assessments

- Learning outcomes assessed included students' EBM knowledge, skills and behaviour using the validated assessment tool- Assessing Competency in Evidence Based Medicine (ACE) (4)
- In addition, students were asked to complete educational prescriptions (EP) (5)- where they developed a question from a clinical scenario, searched and appraised evidence and applied it to the clinical decision

Pragmatic trial in phase II

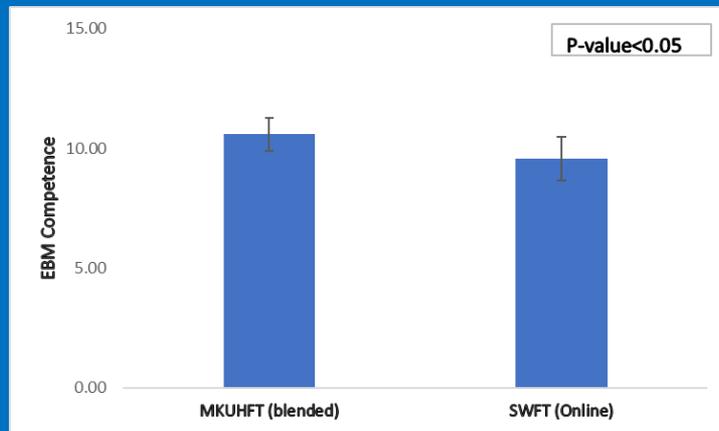


Results

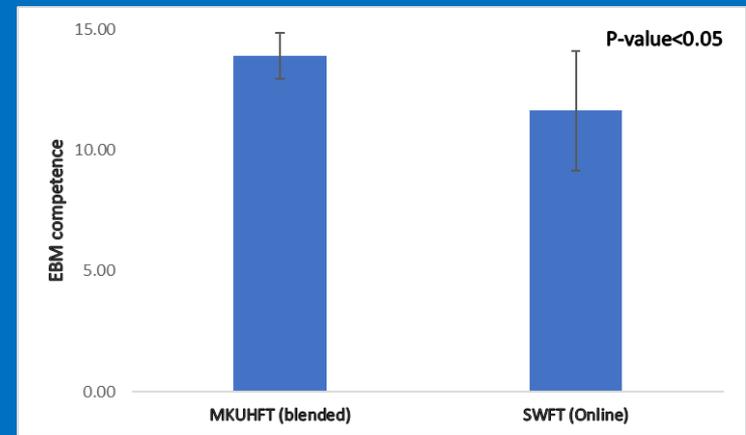
- Education was delivered to 65 students, of whom 46 students completed the ACE test (32 blended / 14 online)
- There were 31 EP submissions (23 blended / 8 online learning)

Comparison of EBM competencies

Mean scores on ACE tool



Mean scores on Educational Prescription



Results contd...

- Students' performances in both the ACE test and EP were better in the blended learning model compared to online learning
- The mean difference for performances in ACE and EP were 1.02 (one tailed p value <0.05) and 2.29 (p <0.05) respectively

Limits

- This study was a pragmatic trial; hence it was not possible to either randomise or blind individual students to the interventions.
- The blended learning approach was resource intensive and needed a lot of planning and commitment.
- It was feasible in this small teaching hospital with a small cohort of students- whether it is applicable in larger teaching hospitals with bigger cohorts of students is uncertain.

Conclusions

- It was feasible to offer both models of clinically integrated EBM teaching.
- Blended learning model is more effective than online learning for clinically integrating EBM teaching as demonstrated by the medical students' competency in EBM knowledge, skills and behaviour
- In designing teaching methods for clinically integrating EBM, educators need to balance resource implications, students' preferences and impact on learning outcomes.

References

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Questions...