Author’s response to reviews

Title: A Randomized Controlled Pilot Trial Comparing the Impact of Access to Clinical Endocrinology Video Demonstrations with Access to Usual Revision Resources on Medical Student Performance of Clinical Endocrinology Skills

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Author’s response to reviews:

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The Editor,
BMC Medical Education.

Dear Sir/ Madam,

RE: A Randomized Controlled Pilot Trial Comparing the Impact of Access to Clinical Endocrinology Video Demonstrations with Access to Usual Revision Resources on Medical Student Performance of Clinical Endocrinology Tasks

I address the reviewers’ comments to this manuscript, giving a point-by-point response to the concerns as detailed below.

Reviewer 1: Aidan Byrne

Major:
1. The introduction does not include any theoretical background or definition of the educational terms used, especially, "task", "skill" and "competence". Terms such as educate, teach, demonstrate and instruct are used interchangably.

The educational terms “clinical skill” and “competence” have now been defined.
The word “task” has been replaced with the word “skill” except where it pertains to the OSCE assessment task. The definitions appear at the beginning of the background section.

The theoretical background is included in the background section with introduction of Dreyfus and Dreyfus’ stages of skill acquisition (page 5, paragraph 3), Anderson’s stages of skills acquisition (page 6, paragraph 2) and Ausubel’s learning model (page 6 paragraph 4 and page 7). The concept of deliberate practice in acquisition of skills (Ericsson 1993) also is addressed in this background section on page 8 paragraph 2. We describe how use of video demonstrations fits with the “four step cyclical process” of experiential learning described by Kolb (page 8, first paragraph).

The term “demonstrate” is now used to refer primarily to demonstrations delivered either face-to-face or on video.

However, the terms “educate”, “teach”, and “instruct” are still used interchangeably as, from the definition of instruction (Collins dictionary), the authors are not clear that there is any real distinction between these terms. The Collins dictionary defines instruction as “the process or act of imparting knowledge; teaching; education.”


2. The educational intervention is described in terms of format (video) but not in terms of its intended educational method.

The educational method is now described in the background section. It involves use of video demonstration as a learning activity to address certain steps in the learning model described by Ausubel. Also described is how the use of video demonstration fits with Peyton’s s 4 -step approach to teaching procedural and physical examination skills (Walker and Peyton 1998) (page 7, paragraph 3).

3. The difference between the groups detected by this study is very large and inconsistent with the effect observed in other studies. The text does not make it clear whether the assessment was taken by all students in the year or only by participants. If the assessment was only associated with this study, then the students excluded from the videos would have no incentive to study for it.

The assessment was undertaken only by study participants, both those students who had viewed the videos and those who had not. All participating students had viewed at least one of the videos. The format of the assessment was the same as the format as the end of year clinical summative or barrier assessment. The content was also content that was examinable in the end of year OSCE, so students were likely to be motivated to study for it.
We have made this clearer in the methods section on page 12, paragraph 2.

4. The comments in the discussion relating to clinical performance and especially clinical outcomes are not justified as this study is confined to a formal assessment setting of early phase students.

On reflection the authors agree these comments are not justified. The assessments were competency-based assessments, which are measures of what doctors or medical students do in a controlled representation of practice, such as an OSCE, as defined by Rethans et al, rather than performance-based assessments, which Rethans defined as assessments that measure what doctors (and medical students) do in actual professional practice. These comments have been modified. They appear on page 12, paragraph 2.

5. The references mainly describe studies of clinical skills rather than history/examination skills and are a limited selection from the available literature.

Despite extensive searching of the literature, we have found very few papers describing use of video demonstration in learning of history/examination skills. We have now included a paper by Maloney et al that uses video to teach clinical assessment of patients with acute problems seen in physiotherapy, as well as paper by Marteau, in addition to the paper already cited by Holland. Maloney et al’s and Marteau’s papers are described on page 21, paragraph 2 and page 22, paragraph 2. There are many studies that use videos of student-patient interactions as a vehicle for feedback to the student, when viewed concurrently by the student and a tutor, but this is a very different strategy from the one used in our study.

6. There is limited reference to the problems of video/web-based learning.

I have added in a paragraph to the discussion on the problems of video/web-based learning. This appears page 23, paragraph 3 and page 24, paragraph 2.

7. Although the number of viewings are described, there is no data on the time spent by students on each video.

Unfortunately we do not have data on the time spent by students on each video. More than 50% of the 87 hits on the endocrine video website involved download to iPhone or iPod and 40 involved download of computer mp4 file. We were unable to objectively assess student time spent viewing due both to the fact that the videos were often downloaded and also that our computer programs did not allow monitoring of time spent running the videos if they were run online. We used student self-report of number of times each video was viewed and know the duration of each video but agree it might have been useful to ask participating students to report time spent viewing the videos.
Minor
1. Page 9 paragraph 2 - (?) criterion-
The (?) in this position has been removed.

Reviewer 2: Fiona Lake
Major Compulsory Revisions: nil

Minor Essential revisions:
1. Reduce the discussion on importance of clinical examination in diabetes as that is peripheral to the context of the paper and could be summarised in a sentence.
   This has been done. It has been reduced to 2 sentences.

2. the introduction seems to emphasise being taught without a patient present (video) is possible and beneficial. This study however does not "remove" the patient as bedside tutorials still occur - more the videos are an adjunct.
   It was not the intention to imply that being taught without a patient is possible and beneficial. Page 7, paragraph 2 has been changed and now introduces Ausubel’s learning model, looking at video being used in the “be introduced to the skill” stage and also the stage of feedback or self-assessment, for the student to check his or her own performance against a best practice exemplar.

   On page 8, paragraph 2, the role of deliberate practice in skills acquisition is noted. The use of video demonstrations of skill in a blended format with face-to face teaching and learning is discussed on page 9 in paragraph 1 and in the discussion on page 24, paragraph 2.

3. Page 9, Paragraph 2, line 7 = remove (? ??).
   The (?) in this position has been removed.

4. - - page 12, paragraph 2, line 4 - I think the wording "performed borderline significantly better" when a p is 0.053 is not the best wording - statistically no significant difference.
   This sentence has been reworded to state:
   “Of the students who reviewed the DMH video, all (12/12) enquired whether the patient had retinopathy and when their last formal eye assessment was performed, compared with 60% (6/10) of students who had not viewed the video (p-value=0.05).”
   It appears on page 16, paragraph 2.

5. - more thought and analysis of the difference between DM history, lower legs exam results and thyroid results should occur - as noted more thyroid exam resources/videos are out there, perhaps it is more standardised around the
world, and DM and lower limbs have few relevant resources, great diversity of
instruction from clinicians and these videos were set up to mimic exactly what
was expected in the exam - when you look at the marking sheets, was the OSCE
marking exactly as demonstrated in the video? The outcome of this is therefore
make videos where there are less resources around or where confusion my
occur for students between the varying approaches of clinicals and their text
books.

More analysis has been made of the difference between results for the DM
history, lower limbs and thyroid results. Revisions have been made on page 19,
paragraph 3 and page 20, paragraphs 1 and 2.

The OSCE marking criteria were those agreed upon as being essential by a
panel of endocrinologists before production of the videos, but the videos
demonstrated competent completion of these criteria. The videos thus did
demonstrate what was required in the OSCE assessments and also
demonstrated clinical signs in patients with the relevant conditions. The videos
covered the same criteria that had been covered in the live demonstration of
thyroid examination and diabetes lower limb examination to the whole student
year at the beginning of the endocrinology block. Revisions to this effect have
been made to the methods section on page 13, paragraph 1.

Please let me know if our responses satisfy the reviewers’ required revisions.

With best wishes,

Yours sincerely,

Emily Hibbert
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University of Sydney