The Impact of Two Teaching Techniques On Physicians’ Knowledge and Performance.

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The purpose of the study reported here was to compare two teaching formats, the traditional lecture and the case presentation, in terms of which technique is more effective in enhancing medical education (CME). Efficacy was measured by assessing participants’ cognitive knowledge utilizing pretest and posttest multiple-choice tests, the physician’s performances using simulated patients, and the physician’s office record keeping and treatment plans. There were differences between the two teaching strategies in regard to their impact on physician’s knowledge and their performance with patients. Physicians attending case presentation sessions were more likely to record changes in their knowledge than physicians attending the lecture sessions, but retention of knowledge was only slightly higher for the case presentation group than the lecture group. More radiological images were taken in the offices of participating physicians who had been in the case presentation group reporting better that their physicians’ plans for their patients were actually partial appropriate than did doctors visiting physician’s from the lecture group.

There were few correlations between the physician’s cognitive knowledge and their performance. Based on the findings of the study, recommendations are suggested for use in planning CME.

Underlying assumptions (concepts) are:

- CME is important and must be a life long experience. (in the US it is used for re-certification)
- It is hard for people to do it themselves, therefore money must be invested in courses and experts.
- Courses have seldom been evaluated for retention of knowledge by participants, or the use of this knowledge for patient care.
- Sub-concept - CME must be used to improve patient care.
- The optimal educational format is not the lecture - but there is not enough proof.
- Funding agents want to use lectures, because they are cheap.

Hypothesis: Physicians attending a case presentation would have longer retention of knowledge and better performance with patients compared with those attending lectures.

It must be questioned here if the objectives of CME in this setting are the same for the staff and all the participants. It is conceivable that for the participant a ‘recertification’ may be more important than improving patient care (which many of them will feel they do well already). Such a difference of objectives can influence the results and participation in the research.
Methods:

The investigators were one MD and one Doctor of education.

1. Two hospitals were used.
   Case presentation instruction was given to staff at both hospitals prior to the experiment. Lectures and case presentations were attended by the instructing author.

2. Four topics were used:
   (a) Epilepsy and behaviour problems
   (b) Headaches and sleep disorders

   These topics lead themselves to both types of teaching and to simple dissimulation by trained "mockers". The (a) topics were given as lectures, the (b) topics as case presentations.

3. Seventy (70) paediatricians attended CME sessions. Afterwards a letter was sent to ask for cooperation with an evaluation protocol. Twenty three (23) of the 70 agreed; 10 were unavailable; 16 were not in ordinary office practice; 2 refused. The delayed multiple-choice test (6-9 months later) was done by 65%.

4. The evaluation consisted of the visit of two simulated patients (mother and child) within one year after CME. The paediatrician was paid for this service. A research assistant would afterwards examine the record, which was rated anonymously by the MD author.

<table>
<thead>
<tr>
<th>Participation of paediatricians in the study</th>
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<tbody>
<tr>
<td>(a)</td>
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<tr>
<td>Headaches</td>
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<tr>
<td>15</td>
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<tr>
<td>Sleep problems</td>
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5. The mothers were given a checklist after the visit to check appropriateness of the treatment plan.

What could be improved in the methodology?

1. Using two sites always increase problems of bias due to many "performers" with different personal styles. It may be necessary, however, if CME participant numbers are small in each place.

Due care was taken to minimise the error due to two sites and many teachers.

However, the presence of the educational instructor would tend to influence the test teacher. Though both methods were so unadulterated, observation might lead to a lessening of the differences between the methods. We have all heard good lectures too, and gained by them.

2. It is a pity, the topics were not the same for lectures and for cases. However, the difficulty can be seen:

It is a choice of one problem over another; if they had chosen to compare lectures in one place to case presentations in the other (on the same subject) we would have crucified that.
The sample is very small and we would certainly like to know the difference between the 23 participants and 21 doctors rejecting evaluation. If the aim is to improve patient care in the US surely evaluating only 50% (probably the best, because least threatened) is insufficient. Of the 20 unavailable ones some were on vacation — could they not have been caught before or after? Were they away for a year? Payment may have influenced self selection too, if practices were perhaps not too bad.

4. The evaluation "took place within a year" that is very flexible. Can one compare the retention of knowledge by MCQ 6-8 months or 9 months after CME in different people? I would have preferred the gap to be less, or the same people tested twice (that might have been too expensive).

The simulated patients all seem to have seen the physician more than once, and not often more than twice. This is reasonably equal. They appear to have been well prepared.

One would like to see the checklist of both the mother and the record’s analysis.

Results.

The absence of tables makes reading a problem. Not all the information to complete a table could be gleaned from the text.

Here is the best I could do.

<table>
<thead>
<tr>
<th>Table 2. Physician cognitive multiple-choice test results (mean % and range)</th>
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<tbody>
<tr>
<td>Headache</td>
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<tr>
<td>----------</td>
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<tr>
<td>Score</td>
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<td>Post test</td>
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<td>0/9</td>
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<td>months</td>
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(The test was produced on 64-65% of participants.)

Cognitively there appeared to be marginally more gain and more continued gain in the case-group, but it did not reach statistical significance. As it is not uncommon in education research, results of the cognitive MCQ test did not really relate to the appropriateness of the treatment plan.

Apparently it was expected of paediatricians to produce a "treatment plan" for the patient: even with the small numbers the difference of appropriate was (74% vs 40%) was significantly greater in the case-group. This was also reflected (not unexpectedly) in the record. The plans were more often recorded in those attending case presentations.

However, a diagnosis was not always recorded (70% vs 25%); in both groups < 78% of diagnoses were considered correct.
What can we make of these results as readers?

From the CME, doctors have apparently learned to keep records better in the case presentations group. This is important, because all of us tend to fool ourselves some of the time: we forget what we said, and if things go well, we think we said the right things.

For ourselves (and subsequent memory related to patient care) recording of treatment plans and what happens is necessary to continually learn.

More important is the mother's feeling that plans are appropriate: this also was higher in the case-group.

Probably the MC text did not test the cognition used in making better plans and records.

Now, what do the authors say

Discussion:

The deficiency of self reporting of physician behavior after CME, which is a common evaluation procedure, is pointed out, as are the problems of observation in the sensitive area of doctor-patient interaction (privacy): hence the use of simulated patients. The study showed that 5-11 year old children can be used as simulated patients.

Means of giving CME have been evaluated before: lectures came 9th in effectiveness, but are still used most. Long-term knowledge retention tends to be poor.

The question I would raise is: does this matter if it is enough to recognize the problem so that it can be looked up? In uncommon problems books are very useful. However, the topics are very common, and knowledge should be sufficient to provide adequate immediate care without recourse to the books. What was missing, was any indication of the level of knowledge required.

The aim of CME is better patient care. There appears to be some evidence from the study that there was an advantage to case-presentations over lectures.

Conclusion:

Though this was not a very elegant study that will advance world knowledge, it shows that with some thought educational methods can be evaluated. This was done with specialists in practice. But there is no reason not to use evaluation of lectures vs other forms to test the performance of students on simulated or real patients.

Knowledge-translation into action for the benefit of the patient is the key to proper patient care. There must be testing of knowledge of students but as "dry" knowledge it does not "work". Even MC questions must emphasize context and must be complemented by testing on cases and interviews with patients - on paper and "in-the-flesh".

It is important to do this to measure the effect of innovations. The study reviewed is only one, perhaps not even a very good example, but the design can be very different, but it does illustrate that some results were obtained. and raises a few