In defence of efficient medical education

In this issue of *Medical Education,* Rangel and colleagues provide an insightful review of scholarship within our discipline by examining a number of highly cited articles using critical discourse analysis (REF). The highly cited articles were found to focus on three content areas: the use of problem-based-learning (PBL) and simulation as innovative pedagogies, and the assessment of knowledge, skills and attitudes. Across all three areas, the authors report a "general preoccupation with achieving efficiency [that] may paradoxically jeopardise the ability of medical schools to address the contextual needs of students, teachers and patients". This conclusion raises two pertinent questions: why does scholarship in medical education seem preoccupied with efficiency and can we defend the quest for efficiency?

It cannot be disputed that we live in a world where resources are scarce. Health economics has emerged as a discipline in its own right in the last 30 years and addresses some fundamental issues, including determining which new health technologies should be funded from the public purse, and how low income countries can generate the highest possible reductions in the burden of disease on an annual health expenditure of less than $50 per head (1). Medical education is therefore not alone in its search for efficiency and the apparent preoccupation in medical education may be a 'trickle-down' effect from the efficiency-driven culture that exists within many healthcare systems.

If the quest for efficiency jeopardises the ability of medical education to achieve its key aim of producing a safe and competent (or ideally, excellent) workforce then it would be more challenging to defend. Whether this is the case partly depends on one's definition of efficiency: as Rangel et al. note, the definition being applied in the studies examined is rarely discussed. Aiming solely for *technical efficiency* (the production of the maximum possible output from the minimum quantity of inputs) is unlikely to be a sufficient defence within medical education. This is because it is possible to be technically efficient but to be producing the wrong thing or ignoring the impact of production on others. However, it is unlikely that any of the developments in PBL, simulation or assessment have been solely driven by the need to cut costs (and thus achieve technical efficiency alone). All have sought (possibly even as their primary aim) to enhance the quality and standards of medical education, although the question of whether they have done so is yet to be indisputably resolved. That cost savings (or more efficient use of the same resources) could be or have been achieved through these developments may simply be a common positive externality.

Indeed, simulation, assessment and PBL are good examples of *social*, *Pareto* and *distributive efficiency* respectively. One of the oft-cited motivations for the use of simulation in medical education is to address potential patient safety incidents when students practice on real patients. In doing so, simulation aims to achieve *social efficiency* by valuing externalities such as patient harm in resource allocation decisions. The shift to standardisation and objectivity in assessment has been driven, at least in part, by a desire for fair, valid and reliable pass-fail decisions. An assessment meeting these criteria should make it impossible to make one party better off (passing one more student) without making another party worse off (the patients who are treated by this 'not quite ready' doctor) and could therefore be described as being *Pareto efficient*. Finally, PBL may help to achieve *distributive efficiency* within a medical school, enabling teaching staff to focus their efforts on the students who most need support, rather than applying a 'one size fits all' didactic approach. Furthermore, none of these developments are likely to lead to *allocative inefficiency*, which can exist alongside technical efficiency if the wrong thing is being produced (imagine a technically efficient left shoe factory, which, by itself, would be pretty much useless).

The discipline of health economics tends to focus on conducting cost-effectiveness analyses rather than studies of efficiency. Cost-effectiveness analysis compares the costs and outcomes associated with different activities, for example comparing the cost per graduate from PBL or 'traditional' medical courses. By using effectiveness as its outcome measure, the results reflect (but do not explain) any interaction between the intervention and the context in which it was implemented. Although not used across all health economic evaluations, adopting a societal perspective ensures consideration of 'knock-on' effects outside the health system and is therefore congruent with the idea of social, as well as technical and allocative efficiency.

Cost-effectiveness analysis is relatively uncommon in medical education: Walsh's interesting book on this subject published in 2010 (2) has only 154 pages, almost half that of the first edition of Holtgrave's book on cost-effectiveness in HIV Prevention published two decades earlier (3). It may therefore seem appropriate to argue for greater use of cost-effectiveness analysis in medical education. However we first need to address the question of how much one extra graduate, or one 10% less likely to make a prescribing error, is worth. Health economics uses – albeit not without controversy – the Quality Adjusted Life Year (QALY) to enable comparison between different health technologies. Decision-makers then apply a threshold value for a QALY: in the UK this threshold is around £20,000-£30,000 ($16,000-$24,000) per QALY gained (4). A number of areas of scholarship would need to be aligned if a similar approach can be used within medical education, but this is an important avenue for future research in our discipline.

What is difficult to dispute is that medical education occurs within a complex system. As such, new developments should be evaluated using appropriate, mixed methods methodologies that include measurement of process and outcome variables, qualitative measurements of the interaction of the development with its context and collection of costs data (5). Only then will we be able to make evidence-based trade-offs between costs, context congruence and consequences.

Pull-out points

- Medical education is not alone in its search for efficiency, which also exists in many healthcare systems.
- A quest for efficiency that jeopardises the production of a safe and competent workforce is hard to defend.
- Simulation, assessment and PBL are good examples of *social*, *Pareto* and *distributive efficiency* respectively – going beyond *technical* efficiency.
- Cost-effectiveness analysis – the primary approach used in health economics - is relatively uncommon in medical education.
- New developments in medical education should be evaluated using appropriate, mixed methods methodologies including collection of costs data.

References

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