

SHORT REPORT

Engaging medical students in occupational and environmental medicine—a new approach

E. M. Shanahan¹, I. Lindemann¹ and M. J. Ahern^{1,2}

¹Flinders University, GPO Box 2100, Adelaide, South Australia 5001, Australia, ²Southern Adelaide Health Service, Repatriation Hospital Division of Medicine, Bedford Park, Adelaide, South Australia 5042, Australia.

Correspondence to: E. M. Shanahan, Division of Medicine, Repatriation Hospital, Bedford Park, South Australia 5042, Australia. Tel: +61 (8)8275 1706; fax: +61 (8)8275 1138; e-mail: michael.shanahan@health.sa.gov.au

Background	For a number of reasons, engaging the interest of medical students in the discipline of occupational and environmental medicine (OEM) can be challenging.
Aims	To renew a curriculum in OEM within a graduate medical programme with an emphasis on student involvement to maximize their interest in the topic.
Methods	A second year student cohort of a 4 year graduate medical programme was surveyed as to their preferences for the content of a short course of OEM embedded in their medical course. The course was extensively rewritten as a result of the student survey, with a number of topics deleted from the old course and new topics added. In order to validate the content of the new course, local occupational physicians (OPs) were also surveyed as to their opinion of an appropriate curriculum in OEM for medical students. The new course was taught to the subsequent cohort of second year medical students. The students' ratings of the course pre- and post-revision were compared.
Results	The student satisfaction rates of the course significantly improved as a result of the changes. The content of the student-led curriculum was strikingly similar to the course proposed by the local OP with a few key exceptions.
Conclusions	Student involvement in curriculum design in OEM is entirely feasible. It can result in a curriculum similar to that designed by expert opinion but has the advantage of strongly engaging student interest.
Key words	Occupational and environmental medicine teaching; student-led curriculum.

Introduction

Despite the well-recognized need for a presence in contemporary medical curricula [1], occupational and environmental medicine (OEM) is often seen as a Cinderella subject in medical courses, with little teaching time devoted to it [2–4]. Reasons for this vary but include competition from other disciplines in crowded medical curricula and a lack of appropriately trained academics. Another problem is student interest in the topic [5].

Flinders University has a postgraduate medical course and has taught a short course in OEM to students for 25 years. The number of hours devoted to the topic is limited to ~12 and the potential content far exceeds the time available to teach it. Faced with the challenge of engaging and informing students by increasing the relevance of the topic to them and the need to update the curriculum, we took a novel approach to curriculum renewal by asking the student body what they wanted taught in the available

time. We hoped that by engaging the students in this way, their interest would be significantly increased.

Methods

Following ethics approval from the Flinders Medical Centre ethics committee, students were asked their preferences for topics to be delivered in the OEM course. Topics were ranked based on student preferences, and the top 14 were selected to form the core of the new curriculum. The course was taught to the 110 students in 2007 and 120 in 2008 and these students were surveyed regarding their satisfaction with the course. These satisfaction ratings were compared with ratings prior to the course's renewal using Mann–Whitney *U*-tests as the data were non-parametrically distributed.

In order to validate the student-driven content of the course, we simultaneously surveyed all occupational

physicians (OPs) in South Australia as to their ideas on essential elements of a curriculum in OEM for medical students.

Results

The topics requested by the students included history taking, occupational respiratory disease, musculoskeletal problems, dermatology, infection, mental health and cancer. In addition, they requested material on workers compensation issues, rehabilitation, writing medico-legal reports, making decisions around fitness to work, chemical hazards at work and principles of prevention. Table 1 lists student satisfaction ratings pre- and post-curriculum alterations. By most criteria, the students felt that the topic had improved. Table 2 summarizes student attitudes towards OEM at the end of the academic year in 2009. Overall student attitudes towards the course were very positive with the group finding the course relevant and considering it an important part of the curriculum.

Discussion

This study found that asking medical students for their teaching preferences in OEM brought about significant improvements in student satisfaction ratings. This is important because many of the concepts introduced under the banner of OEM are core components of postgraduate curricula [6] but also help students manage the future occupational health needs of the community and helps generate interest in OEM as a possible career choice.

We also found a strong concordance between the topics selected by the local OPs and the students, vindicating this approach. Points of difference were that OPs felt that students should not be taught about assessing fitness to drive or how to write medico-legal reports and that occupational epidemiology should be included, which students felt to be unnecessary.

The students'-specific requests for inclusion in the course are of interest. Specifically, they were keen to have information and advice regarding practical 'how to' skills in the area. Although they did not want to know the details of workers compensation, they understood the importance of learning the doctor's role within the system.

Table 2. Student attitudes to the topic of OEM (2009) [$N = 76$ (response rate 60%)]

Question	Student response (%)						
	7	6	5	4	3	2	1
Activities within the topic provided relevant learning experiences	3	54	28	12	4		
Overall I was satisfied with the quality of this topic	4	59	26	5	4		
The topic helped me to develop my thinking skills (i.e. problem solving, analysis)	6	30	30	17	13	3	
The topic provided material relevant to my future practice in medicine	9	46	30	12			
Overall I found this topic interesting	10	35	38	13	3		
This topic is an important component of the medical curriculum	13	46	29	10			
This topic has stimulated my interest in occupational medicine as a potential career	3	20	33	20	14	9	

7 = strongly agree, 6 = agree, 5 = somewhat agree, 4 = neutral, 3 = somewhat disagree, 2 = disagree, 1 = strongly disagree.

Table 1. Student evaluation of teaching assessments—2006 (pre-change) $n = 102$ (88% response) and 2007/08 (post-change) $n = 160$ (69% response rate)

Question	Agree or strongly agree (percentage response)		
	2006	2007/08	<i>P</i> value
Activities within the topic provided relevant learning experience	53	80	<0.001
I understood the concepts presented in the topic	76	85	<0.01
The topic content was presented at an appropriate pace	55	84	<0.01
The topic was presented at an appropriate level of difficulty	68	81	NS
The teaching materials and resources were helpful in directing my learning	52	65	<0.05
This topic helped me develop my thinking skills	27	48	<0.01
My ability to work independently has increased	13	17	<0.01
I understood the assessment of this topic	43	66	<0.05
I was satisfied with the quality of this topic	53	74	<0.001

NS, non-significant.

They wanted skills on writing reports, although this topic was not particularly highly rated by either the presenter or the local OPs. They asked for advice on specific medical assessments such as fitness to drive. In the more traditional medical topics, they were particularly interested in infection and mental health at work, both topics that are relevant to the wider practice of medicine and to doctors' own occupational health.

Topics of lesser interest to students that were removed from the curriculum included the history of occupational medicine, health and safety law, ethics and epidemiology. Explanations offered for the lack of interest in these topics included encountering some material previously (e.g. ethics and epidemiology) and a perceived lack of relevance.

This study has a number of strengths. The approach is novel and student focused. The aim was to improve student engagement in a topic often considered marginal in medical curricula. The potential weakness of the approach is that the course could move from involving 'mainstream' material to marginal material of lesser relevance. Comparing students' choices with those of practising OPs proved otherwise.

Many medical students get little or no exposure to OEM in their medical studies when career choices are being decided. Although there are multiple influences on student career decisions, it is acknowledged that experiences in medical schools contribute to this process. Stated and hidden curricula, role models and the physical and professional environments in which education is delivered may all influence career choice [7]. It is gratifying to see from the responses that at least 50% of the students from this medical school at this stage would consider occupational medicine as a career. The vast majority of this student cohort felt that the topic was relevant, interesting and an important part of the curriculum. Clinical experiences and mentors are influential elements in career decisions in medical school and during early clinical rotations [8]. A challenge for those currently working in occupational medicine is to ensure students and young graduates have positive clinical and mentoring experiences in this field.

Student performance in exams is often used as a measure of curriculum effectiveness, including in OEM [9]. Student evaluation is also used as one measure of performance of medical course content [10], but there are few published examples of medical students assisting in curriculum development. We have demonstrated that engaging students in curriculum development in OEM is possible and can result in a curriculum that is satisfying to teach and improves student interest in the area.

Key points

- Involving medical students in curriculum development is possible and can result in a curriculum similar to that generated by expert opinion.
- Student-led curriculum development in occupational and environmental medicine helps engage student interest in the discipline.

Conflicts of interest

None declared.

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