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Undergraduate Education in Anaesthesia: The Influence of Role Models on Skills Learnt and Career Choice

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SUMMARY

Undergraduate teaching of anaesthesia occurs in about two-thirds of Australian departments of anaesthesia: however, student contact hours are limited compared with those of other disciplines.

Seventy-five directors of anaesthesia were surveyed by written questionnaire concerning the time devoted in their department to undergraduate study and teaching of practice/skills to undergraduate students (40 responded).

One hundred and sixty final year students were surveyed regarding career choice, anaesthesia skills taught them and role models identified during their training (101 responded).

Most final year students had been taught and had learnt the basic skills of life support such as bag and mask ventilation, cardiopulmonary resuscitation and intravenous cannulation. However, fewer were taught more specialized skills such as induction of anaesthesia and spinal anaesthesia. Positive role models in teaching anaesthetists were identified by 66% of students, more commonly if they were taught advanced skills, and were significantly associated with satisfaction with theoretical and practical training. For those students intending a career in anaesthesia (18%), 94% identified a positive role model compared to 65% who did not (P=0.03).

Key Words: ANAESTHESIA, EDUCATION: undergraduate

In 1901 Buxton[1] suggested that anaesthesia should be a compulsory subject in the medical curriculum because anaesthesia was usually provided by the most junior member of the surgical unit. However, it was not until 1912 that the General Medical Council (U.K.) included anaesthesia in medical training. By 1947 when anaesthesia had developed as a specialty, the subject was removed from the curriculum and it was not until 1980 that it was reinstated[2]. In Australia Baker[3] (1974) reaffirmed the importance of teaching anaesthesia to medical students and outlined a curriculum of practical and theoretical training. Since then a number of studies have shown that the quality of undergraduate anaesthetic teaching has been variable in quality but often ineffective. In a 1982 study[4] it was shown that no more than 50% of newly qualified doctors could manage an unconscious patient and only 8% (no better than the general population) could perform cardiopulmonary resuscitation[5]. More recently Gould et al[6] found that house officers had a very poor knowledge of analgesic drugs and the management of perioperative complications such as hypotension.

The reasons for such ineffective undergraduate teaching are not obvious. Despite anaesthesia being part of the curriculum in all medical schools there is no research on specific practical skill related training[2].

This study is a descriptive analysis of anaesthetic teaching to undergraduates in Australia enumerating skills taught and learnt and investigates the influence of role models on the educational process.

METHOD

A postal survey was sent to all directors of university-affiliated anaesthetic departments in Australia requesting information on the time devoted in their unit to undergraduate theory and practical skills teaching. In addition it requested opinions on the range of skills thought appropriate for students to be

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taught. All exiting final year medical students from two Australian medical schools were also surveyed regarding career choice and the skills they had been taught and felt able to perform under supervision. The students were also asked if they had identified positive role models in various disciplines during their training and it was determined using a Chi squared/Fisher exact test whether this influenced career choice or quality of training.

RESULTS

All 75 directors of anaesthesia in Australia were surveyed and 40 (53%) responded. The final year medical students were surveyed at the end of 1995 and 101 out of 160 (63%) responded. Table 1 shows the percentage of units taking students for teaching and the number of contact hours during each year of medicine. This shows that although most units train undergraduates, the contact time is very limited except where elective courses are undertaken. In contrast, at one university surveyed, final year students were exposed to 120 hours of formal surgical teaching.

TABLE 1

Medical student exposure to anaesthesia (hours)

Year	1-3	4	5	6	
				Core	Elective
% of Units taking students (n=40)	63	62	56	88	19
Anaesthesia contact hours (mean)	10.5	10.8	11.3	25.2	40

Table 2 summarizes the percentage of directors of anaesthesia who thought students should be taught the basic skills listed and compares it with the percentage of students who were actually taught and subsequently learnt the skill (i.e., felt confident to perform the skills under supervision). It shows that student teaching was above the expectation of directors and there was a high level of basic skill acquisition, except in more technical areas of anaesthesia such as induction.

Positive role models were identified by the students in city general practice (38.6%), rural general practice (72.3%), anaesthesia (66.3%) and surgery (58.4%). Table 3 outlines the career intentions of this cohort of students, showing that anaesthesia attracts nearly 18% of students. This compares with 7% of directors of anaesthesia deciding on an anaesthetic career as a medical student; however, 21% made their decision as an intern, 50% as a resident and 22% as a registrar.

TABLE 2

Anaesthetic skills thought appropriate by directors of anaesthesia (n=40) for students (n=101) to learn compared with skills actually taught and learnt (% of responders)

	CPR	IV Insertion	Face Mask	Laryngeal Mask	Intubation	Induction	Spinal
Directors	100	93	100	53	67	33	20
Students taught	100	10	98	79	95	78	29
Learnt	96	95	95	77	80	46	27

TABLE 3

The career intentions (% of respondents) of exiting final year medical students (n=96). Students were invited to make more than one choice if appropriate

Career	Yes	No	Undecided
City GP	28.9	42.2	28.9
Rural GP	40.0	30.5	29.5
Anaesthesia	17.7	51.0	31.3
Other specialty	69.1	21.6	9.3

In those students intending to follow a career in anaesthesia, 88% achieved a basic skill such as intubation. This was no different from students *not* intending a career in anaesthesia 82% ($P=0.32$). However, with a special skill such as anaesthetic induction, 76% intending a career in anaesthesia achieved this compared with 47% who did not ($P=0.05$). This suggests that teaching more advanced techniques may stimulate career interest or alternatively that these students had pre-existing interest or skills or had more confidence and asked to be taught more. Teaching advanced skills had no influence on rural and city GP career choice.

For those students intending a career in anaesthesia, 94% identified a positive anaesthetic role model compared with 65% of those not intending an anaesthetic career ($P=0.03$).

For students intending a rural career, 87% had a rural GP role model compared with 72% not intending a rural career ($P=0.21$). Identification of a positive role model seems in part related to special anaesthetic skills learnt. For a basic skill such as laryngeal mask insertion, of those students identifying an anaesthetic role model 81% achieved the skill compared with 71% not identifying a role model ($P=0.31$) and for intubation 85% versus 68% ($P=0.06$). However, for induction of anaesthesia, 55% of students identifying a role model learnt this special skill compared with 29% without ($P=0.01$).

Seventy-three per cent of students were satisfied with their theoretical training and 64% with practical training.

Figure 1 shows a highly significant association between identification of an anaesthetic role model by a student and satisfaction with both theoretical

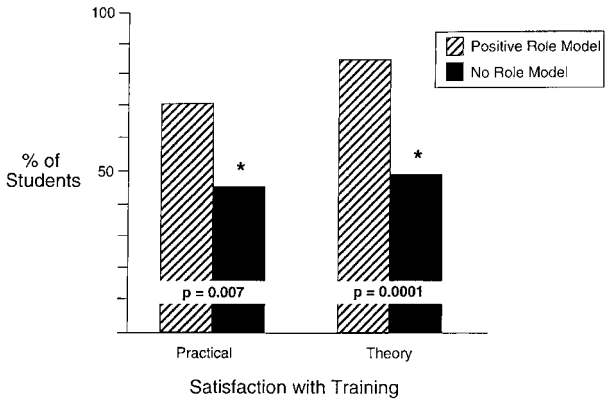

FIGURE 1: The influence of positive role model identification in anaesthetic teachers on satisfaction with theoretical and practical training.

and practical anaesthetic training. However, (satisfaction/dissatisfaction) with training was not associated with a future anaesthetic career intention (65% versus 71%, P=0.76).

DISCUSSION

Undergraduate education in anaesthesia provides new graduates with basic life support skills and is an ideal opportunity for the practical demonstration of important principles of pharmacology, anatomy and physiology. This study showed that although medical students have limited exposure to anaesthetics compared with other topics, their perceived learning of practical skills is impressive and their satisfaction with training reasonably high. This probably reflects the strong commitment of directors of anaesthesia to student training. This level of commitment is also reflected in the relatively high interest in anaesthetics as a career (17.7%) compared with a US study (documenting similar resources) where only 5 to 6% of students intended choosing anaesthesiology[7].

A positive undergraduate experience for medical students is important for the future recruitment in most disciplines of medicine. This study shows that two thirds of students have identified a positive role model in their anaesthetic teachers and that this was significantly associated with a satisfactory learning experience and a career intention in anaesthesia. Positive role model identification is clearly a complex psychological process but in some part is likely if the teacher invests time and interest in the student by teaching more advanced anaesthetic skills. The study also shows that those students learning more advanced skills are more likely to be interested in anaesthetics as a career.

In conclusion, significant time and effort are invested into teaching undergraduate anaesthesia in Australia, resulting in graduates who feel capable of basic life support but also a significant number who are attracted to a career in anaesthesia. While it is essential to have basic training in place, this study confirms the editorial conclusion of Cooper and Hutton[8] that "it is the responsibility of all anaesthetists to ensure that when undergraduates are with them they teach diligently to the best of their ability and provide a good role model to which students can aspire".

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