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A profile of anaesthesia trainees in Hong Kong

香港見習麻醉師的狀況概覽

Objectives. To examine the demographics, professional background, progress, and aspirations of anaesthesia trainees in Hong Kong.

Design. Anonymous questionnaire consisting of 56 items grouped into the areas of demographics, and anaesthetic and postanaesthetic training. Eight of the items were open questions. Descriptive analyses were undertaken for the closed items.

Setting. Hong Kong College of Anaesthesiologists, Hong Kong.

Participants. All trainees.

Main outcome measures. Demographic data, aspects of training, supervision, working environment, career aspirations, job satisfaction, and morale.

Results. The response rate was 77%. The various problems highlighted by respondents included the need for more input and feedback into individual training programmes, the lack of senior support, and the need for more relevant and examination-orientated courses and workshops. Unsatisfactory aspects of the specialty reported were the lack of control over work routines, relationships with surgeons, boredom, and the poor public image of the specialty. Eighty-four percent of respondents reported having reasonable to good job satisfaction.

Conclusions. Ongoing benefits could be derived from enhancing communication between trainees and the Hong Kong College of Anaesthesiologists, through appropriate channels for trainee feedback.

Key words:

Anesthesiology, education;
 Career choice;
 Decision making;
 Education, medical, graduate

關鍵詞：

麻醉學，教育；
 職業選擇；
 決定；
 教育，醫學的，畢業生

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目的：調查香港見習麻醉師的人口統計學、專業背景、發展及對工作的期望。

設計：五十六項由人口統計學、麻醉學及在職培訓等有關問題組成不記名的問卷調查。其中八項是開放式問題，對其餘問題均作了描述分析。

安排：香港，香港麻醉科醫學院。

參與者：所有見習麻醉師。

主要結果測量：人口統計學數據、培訓、監管、工作環境、對工作的期望、對工作的滿意程度及士氣等各方面之狀況。

結果：問卷的反應率為77%。答卷者強調的問題包括：對個別培訓計劃需要更多投入和意見反映，缺乏上級支持，和需要更多相關及應考的課程及實習。而結果顯示，見習麻醉師對麻醉專業不滿意的方面包括：工作缺乏監管，不滿意與外科醫生的關係，工作乏味、以及公眾對該專業的形像較差。結果顯示84%的答卷者對該職業感到滿意。

結論：要加強見習麻醉師與香港麻醉科醫學院之間的溝通，見習麻醉師可透過適當的渠道反映意見，這樣可有助發展長遠的益處。

Introduction

Developing a medical discipline and producing high calibre specialists to work within it is in part dependent on the recruitment and retention of high quality and motivated junior staff (trainee specialists or 'trainees'). In Hong Kong, the specialty of anaesthesia has experienced chronic problems with the recruitment of trainees. Given the recent problem of job shortages for medical graduates and the implementation of the contract system for new recruits to the Hospital Authority, however, it is possible that the retention of good trainees will be more of a problem than recruitment in the near future.

This paper reports the results of a questionnaire-based survey examining the professional background, progress, and aspirations of anaesthesia trainees in Hong Kong. The objective of the study was to outline possible deficiencies in the current training programme in anaesthesia, which might serve as a guide to future improvements.

Methods

The survey consisted of a numbered questionnaire which was sent with a covering letter and stamped addressed return envelope to 105 trainees working in eight Hong Kong hospitals with recognised training posts (names provided by each hospital) in December 1997. A second identical questionnaire (reminder) was sent 5 months later. Survey responses were anonymous.

A total of 56 items were included in the questionnaire, grouped into the areas of demographics, and anaesthesia and postanaesthesia training. The questionnaire was designed by the authors and has not been previously validated. Eight of the 56 items were open-ended questions. Descriptive analyses were undertaken for the closed items. Correlation analysis and the Chi squared test were used for further analysis (level of significance, $P < 0.05$).

Results

Eighty-one (77.1%) replies were received overall, although some trainees did not respond to all questionnaire items. Analysis of demographic data showed that 34 (42.0%) respondents were female. The mean age at which respondents started medical school was 18.9 years (standard deviation [SD], 1.05 years), with a range of 17 to 24 years. Sixty-one (75.3%) respondents attended medical school in their country of origin. Fifty-seven (70.4%) respondents completed

undergraduate medical studies in Hong Kong, 15 (18.5%) in Australia, five (6.2%) in the UK, three (3.7%) in Singapore, and one (1.2%) in Ireland.

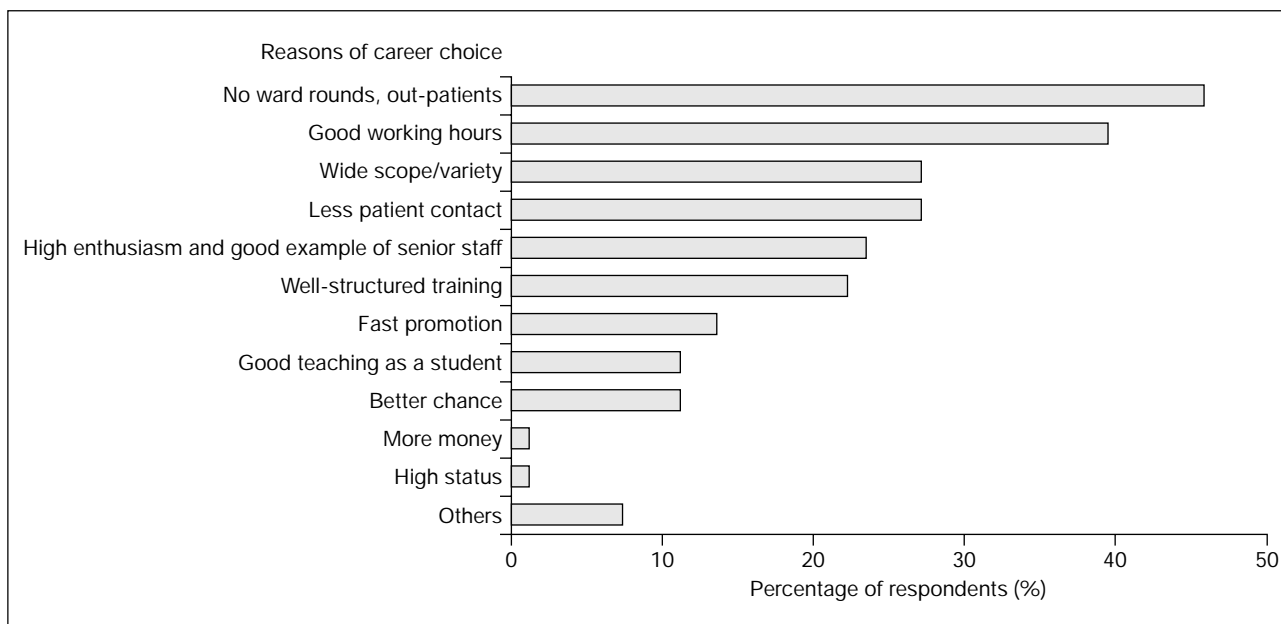
Forty-one (50.6%) respondents entered training in anaesthetics immediately following completion of internship, whereas the remainder had varying periods of non-anaesthetic medical practice before commencing training—21 (25.9%) 6 to 12 months, 11 (13.6%) 1 to 2 years, two (2.5%) 2 to 3 years, one (1.2%) 4 years, and one (1.2%) more than 5 years of non-anaesthetic practice. This experience in other specialties included general medicine, paediatrics, general surgery, cardiothoracic surgery, and ear, nose and throat surgery, obstetrics and gynaecology, accident and emergency, intensive care, orthopaedics, and work in a government out-patient department. Three (3.7%) trainees had additional degrees—two (2.5%) Bachelor of Science degrees, and one (1.2%) a Bachelor of Arts degree. Four (4.9%) trainees had other vocational specialist qualifications, two (2.5%) Member, Royal College of Physicians, one (1.2%) Member, Royal College of Physicians (Paediatrics), and one (1.2%) Fellow, Royal Australian College of Physicians.

The mean age of starting anaesthetic training was 25.8 years (SD, 1.55 years), with a range of 23 to 31 years. Fifty-one (63.0%) respondents chose anaesthesia as their first choice of specialist vocation. Reasons given for selecting anaesthesia as a career choice are illustrated in Fig 1. Of the 22 (27.2%) respondents whose first choice was not anaesthesia, preferred specialties included accident and emergency, general medicine, paediatrics, obstetrics and gynaecology, and surgery.

Thirty-seven (45.7%) respondents decided to choose anaesthesia during internship, 34 (42.0%) as a medical officer, and eight (9.9%) as medical students. The mean number of months spent in anaesthesia training at the time of the survey was 32.9 months. Forty-four (54.3%) respondents were currently working in a teaching hospital.

Supervision and logbooks

Levels of supervision varied widely (Fig 2). More experienced trainees were less likely to be supervised in normal working hours ($r = -0.32$, $P = 0.004$) but there was no correlation between duration of training and level of supervision out of normal working hours ($r = -0.07$, $P = 0.54$). No correlation was observed between sex and level of supervision ($P = 0.97$). Sixty-eight (84.0%) respondents kept a logbook recording their clinical experience. Twenty (29.4%) had their



* Respondents may choose more than one reason

Fig 1. Reasons for choice of career in anaesthesia*

logbooks reviewed regularly by senior staff, but only 15 (22.1%) trainees used their logbooks to identify and correct any deficiencies in their clinical experience.

Rotations

Twelve (14.8%) respondents will work in one hospital only during their training period, whereas the remaining trainees are to spend time in more than one hospital. Forty-seven (58.0%) respondents indicated they had a choice in deciding hospitals, whereas 30 (37.0%) will not be involved in this decision. Forty (49.4%) respondents could choose the subspecialty for elective rotation. Trainees working in a teaching hospital were more likely (0.64 versus 0.32) to be able to choose the specialty (P=0.006). Thirty-six (44.4%) respondents

considered the ideal duration for elective rotation to be 4 to 6 months, whereas 21 (25.9%) considered 10 to 12 months to be ideal.

Examinations and courses

With regard to examination format, 47 (58.0%) trainees opposed the idea of having a three-part examination, one (1.2%) agreed with this format, two (2.5%) were neutral in their response, and 31 (38.3%) did not respond to this item. Comments were made on the format of courses currently available in Hong Kong. Informative courses comprising mainly lectures were generally considered too long, and interactive rather than didactic teaching was considered desirable. Comment was also made on the difficulty of getting time off work to attend offered courses.

Thirty (37%) respondents considered examination fees to be set at about the right level, 49 (60.5%) considered fees too expensive, and one (1.2%) was prepared to pay a higher fee.

In-training assessment

Forty-four (54.3%) respondents reported that they did not have any formal, regular in-training assessment, whereas 34 (42.0%) received such assessment. The majority felt that such assessment was desirable—62 (76.5%) trainees were in favour of regular, formal in-training assessment, compared to 15 (18.5%) who did not support this approach. Forty-five (55.6%) respondents felt that such assessment should count towards the fellowship qualification, whereas 32 (39.5%) disagreed. The chance of having regular in-training

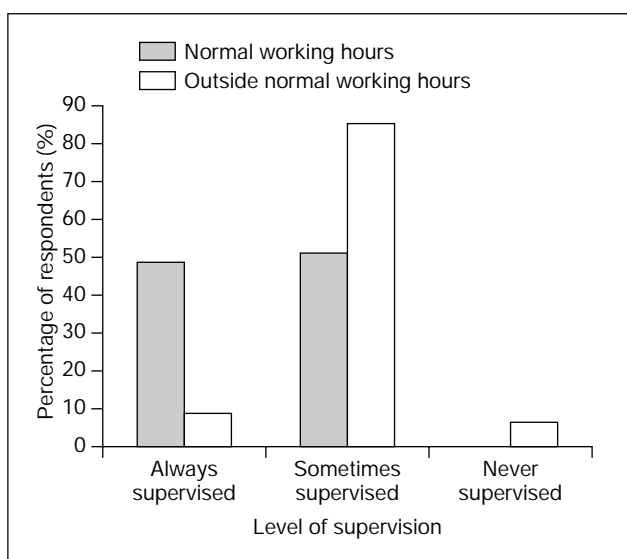


Fig 2. Level of supervision

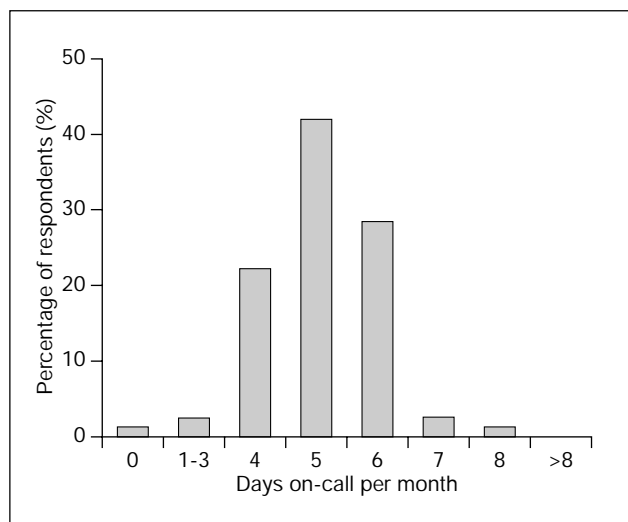


Fig 3. Days of on-call duties per month

assessment for trainees was 0.55 in teaching hospitals compared to 0.29 in non-teaching hospitals (P=0.027).

Simulators

The majority (79.0%) of trainees supported the use of human patient simulators in training, with a lesser percentage (16.0%) disagreeing. Forty-four (54.3%) trainees also considered that human patient simulators should be used in examinations, with 31 (38.3%) disagreeing.

Hours of work and holidays

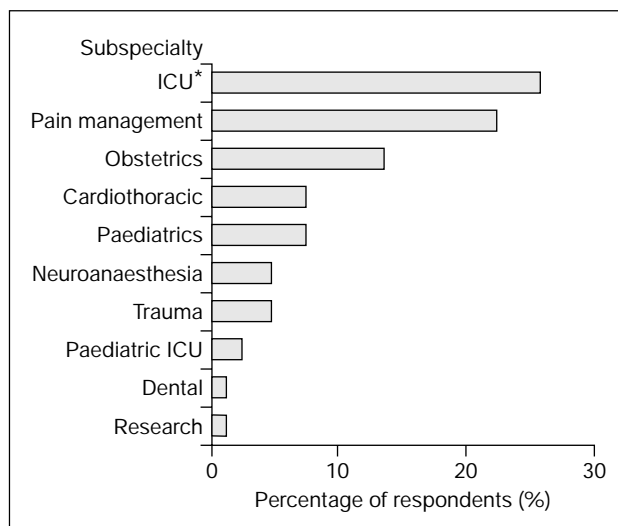
Respondents' number of on-call duties per month are shown in Fig 3. There was a wide range of responses with regard to the amount of holidays allowed per year, with answers ranging from 7 days to over 1 month. There was similar confusion regarding the duration of study or conference leave allowed per year. Answers ranged from 2 days for examination purposes to 90 days over the entire career period. Fifty (61.7%) respondents indicated that they had taken some form of study or conference leave in the year of the survey and 36 (44.4%) reported that their study or conference leave expenses were paid.

Research

Thirty-six (44.4%) respondents felt that adequate research and study opportunities were available. Twenty-two (27.2%) respondents indicated they did not have such opportunities, whereas the remainder did not respond. Research funding was mostly via departmental funds. Only five (6.2%) trainees had published research data.

Overseas training

Thirteen (16.0%) respondents indicated they were encouraged to gain experience overseas during training,



* ICU Intensive Care Unit

Fig 4. Preferred subspecialty after completion of specialist training

whereas a greater number (50, 61.7%) indicated they were not. Eighteen (22.2%) respondents chose the response 'did not know' to this question. There was uncertainty as to whether overseas training would be accredited.

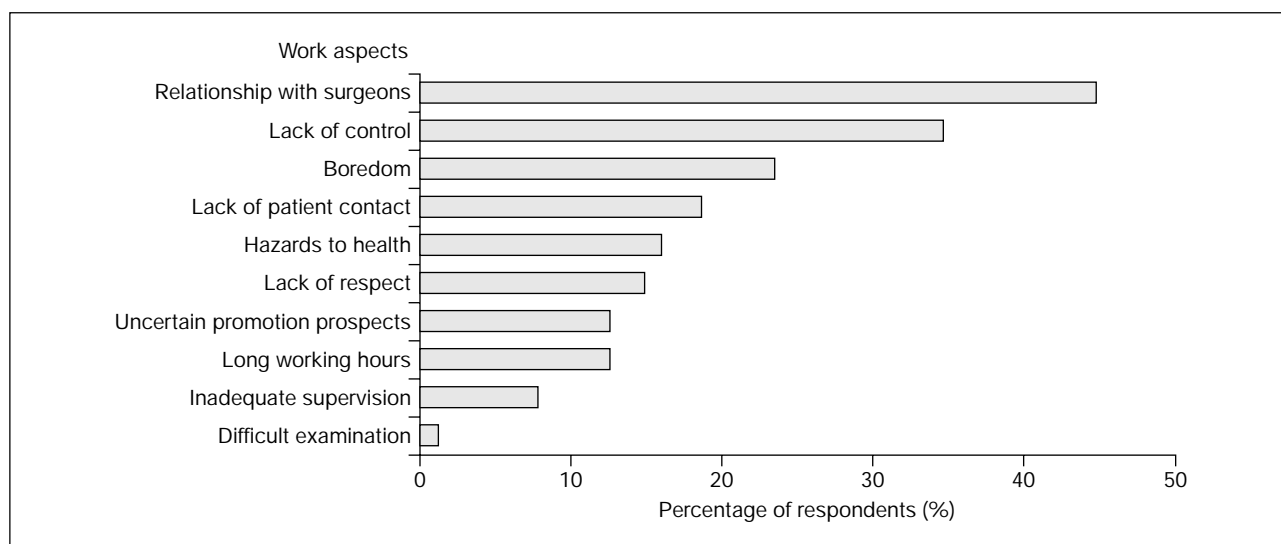
Postanaesthesia training

Following anaesthesia training, 60 (74.1%) respondents intended to practise within the public sector, two (2.5%) in private practice, three (3.7%) in academia, and 10 (12.3%) in a combination of the above areas. Preferred future subspecialty careers are shown in Fig 4.

Sixty-seven (82.7%) respondents felt that they had made the correct choice in anaesthesia training, whereas four (4.9%) felt they had not. Given the opportunity, eight (9.9%) stated they would choose a different medical specialty—general medicine or paediatrics, surgery, radiology, and public health were preferred specialties. Twenty-one (25.9%) respondents stated they would have preferred a career other than medicine, whereas 48 (59.3%) were not of this view. Alternative careers preferred were accountancy (3), law (2), business (2), architecture (2), Hospital Authority administrator (1), chef (1), veterinary surgeon (1), and housewife (1).

Morale

Figure 5 illustrates the most commonly selected responses regarding unsatisfactory aspects of anaesthesia practice. Forty-six (56.8%) respondents perceived anaesthesia to have an unsatisfactory status among the general public (Fig 6). The likelihood of this perception was higher for those working in



* Respondents may choose more than one reason

Fig 5. Unsatisfactory aspects of work in anaesthetics*

teaching hospitals than for those not in teaching hospitals (0.68 versus 0.43, $P=0.02$). The results also showed that the longer the period of training, the lower the level of satisfaction with the general public's appreciation ($r=-0.3$, $P=0.008$), and this did not differ according to sex ($P=0.65$). Concerning perception of anaesthetist status among hospital colleagues, 42% reported this as acceptable, with no statistically significant association seen according to type of hospital, sex of the respondent, or duration of training.

Overall job satisfaction was rated as 'good' (34.6%), 'reasonable' (49.4%), 'poor' (6.2%), or 'none' (9.9%). There was no correlation seen between type of hospital, sex of respondent, or duration of training and

job satisfaction. Fifty-seven (70.4%) trainees indicated they would advise junior colleagues, who were interested, to take up anaesthesia as a career.

Discussion

This is the first survey undertaken of anaesthesia trainees in Hong Kong. The high response rate suggests that anaesthesia trainees are keen to express their opinions on the various aspects of training currently available in the region. Seventy percent of respondents were local graduates, whereas the remaining 30% attended medical schools in various Commonwealth countries. Anaesthesia appears to have a relatively high proportion of overseas graduates currently. This is

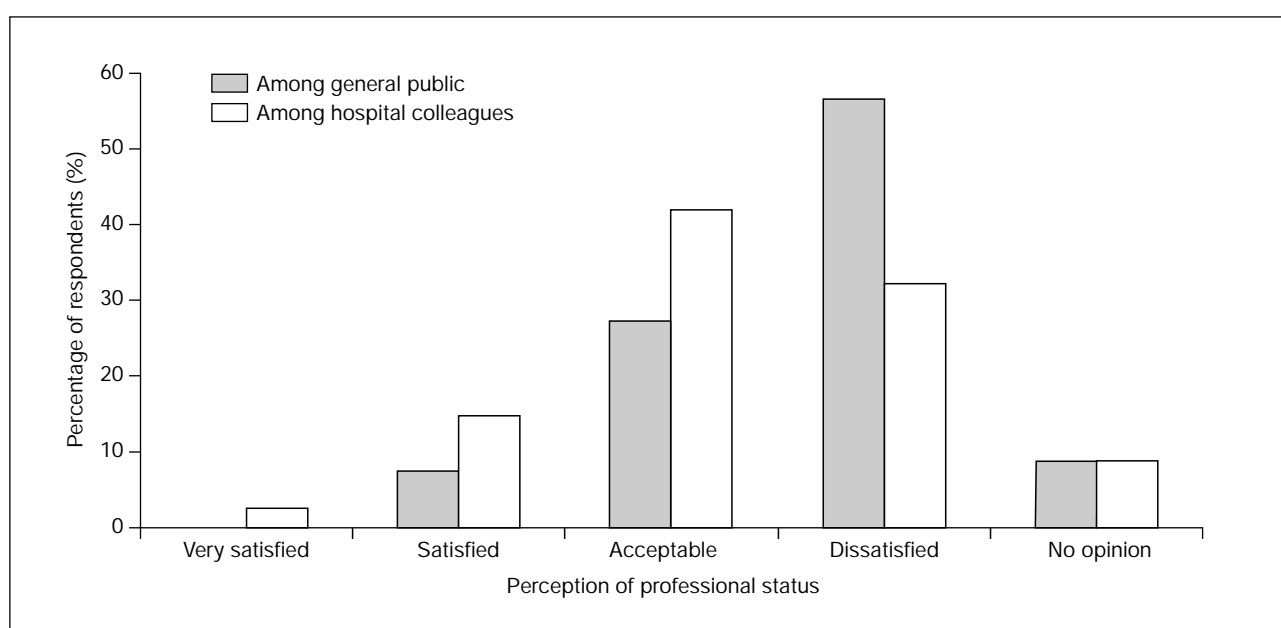


Fig 6. Level of satisfaction with perceived professional status among the general public and hospital colleagues

partly due to the difficulty in recruiting local graduates in the last few years. Training posts that are recognised by the Australia and New Zealand College of Anaesthetists (ANZCA) have also attracted overseas graduates to Hong Kong. It is anticipated, however, that with current job shortages and the implementation of the 3-year contract system for new recruits, most new trainees will be recruited locally in the future.

Fifty-one percent of trainees joined anaesthesia training directly after completion of internship. This percentage is also expected to increase due to the new contract system. As these residents are younger and less experienced than the remainder of trainees, the need for stratification of learning objectives for each level of training has been suggested.¹

The most common reasons given for choosing anaesthesia as a specialty were the lack of ward rounds and out-patient clinics, better working hours, and less patient contact. This differs from a Canadian survey of anaesthesia residents which reported the most common reasons for their choice as having 'hands-on' experience, time-off, the portability of practice, gratification from patient care, and the practical use of physiology and pharmacology.² Working hours and time-off feature highly on both lists, which corroborates recent studies indicating medical students now give more consideration to how their work and training will affect their quality of lifestyle when choosing a career. Studies have shown that clinical exposure alone has little influence on students' career choice, with the interplay of experiences and clinical teachers appearing to exert a greater influence on the choice of specialty.³ The quality of teaching activities rather than the duration of exposure appears the more important. Enthusiasm and example by senior staff also appear to exert an important influence on the choice of specialty.⁴

As expected, the results show that the longer the duration of training, the lower the level of supervision during working hours. Of concern is the response by 6.2%, who claim to be never supervised when working out of hours. With the introduction of the two-tier system, this figure should decrease as more senior support is expected to be available during these hours. In the US, training programmes last for 3 years, with close supervision throughout this time. The level of supervision is the same throughout night and weekend duties, and it has been suggested that the quality of the learning experience rather than the length of the training period is a more important factor in producing competent anaesthetists.⁵

With regard to logbooks, their main function should be to enable the trainee to recount their training experience, and to highlight deficiencies in exposure. Tutors can act as mentors by discussing logbooks with individual trainees. It has been shown that trainees using computer logbooks are more able to provide accurate information on their clinical exposure.⁶ Factors that may influence the use of logbooks include portability, ease of data input, and the type of information to be entered. A survey performed in the UK in 1995 showed that as trainees become more senior, they are less likely to continue keeping logbooks.⁷ The use of a logbook to record clinical experience is now a requirement of the Hong Kong College of Anaesthesiologists (HKCA), however.

Clinical competence requires a variety of clinical encounters.¹ The aim of having hospital rotations is to ensure that trainees are exposed to a suitable variety and complexity of case mix. Sheer volume of clinical experience and repeated experience do not guarantee ability. The clinical experience should form the stimulus for learning and the basis for development of clinical decision-making abilities, intuition, and judgement. It is important to assist trainees to become efficient self-directed learners, to form the basis for personal life-long continuing education. An experiential curriculum, a problem-based approach, and an evidential learning strategy should be the three dimensions of such a learning process. This approach has recently been adopted in the new undergraduate medical curriculum of The University of Hong Kong.

Harrison⁸ has discussed the relationship between examinations and training schemes, stating that some form of assessment is necessary during the trainee's career to ensure that the required specialist standard is reached. The primary examination should act as a screening test, as well as an assessment of basic scientific knowledge he asserts, whereas external examinations should be used to deliberately influence teaching and training. In an open examination system, the most important link is likely to be good communication between examiners and trainees. Such communication can occur through the supervision of courses, and considerable benefit can be achieved by having postgraduate courses organised with the help of examiners.

There has been considerable discussion on the best methods of assessing trainees, with no single method proven to be the best in assessing clinical performance. The HKCA final examination currently has three components, including short answer questions, an oral

examination, and an Objective Structured Clinical Examination. In a survey of Fellows of the Faculty of Intensive Care, ANZCA, respondents judged examinations to be a fairer method of assessment than in-training assessment, although most considered that their supervisors of training would be able to make fair and valid assessments of their competence.⁹ Their faculty has recently introduced a requirement for such in-training assessment.

Currently, the purpose of in-training assessments in Hong Kong is to provide continuous feedback of performance and competence to the trainee, and to highlight areas for further improvement. Competence-based learning will be associated inevitably with workplace competence testing. Such assessment, however, is very difficult to perform. There are concerns with such clinical competency testing.¹⁰ These include the following issues:

- (1) The assumption that a sample of observed behaviour is representative of all related professional behaviours may not be valid;
- (2) There is still no consensus on the best method for scoring of such observations—suggestions have included using a checklist of observations, critical incident identification, etc; and
- (3) Clinical competency testing may under-rate the complexity of professional tasks in anaesthetic practice.

To equate observation of competence, which may be only surface behaviour, with clinical reasoning and decision making, which are complex cognitive skills, is clearly incorrect. There is also the problem of the impartiality of the assessor. In-training assessment of competence in a particular department is a subjective appraisal and may potentially reflect the trainees' standing within that department. Until such assessments can be shown to have improved validity and reliability, in-training assessments should not be credited towards the Fellowship qualification.

The concept of simulator usage as a teaching tool was popular with trainees, and approximately half felt that simulator would be appropriate for examination purposes. There are three types of simulator available—theatre simulators, computer simulators, and mannequin simulators.^{11,12} Computer screen-based simulators are currently available for Hong Kong trainees and appear useful for self-study. Theatre-type simulators, however, can provide a realistic environment in which to study responses to anaesthetic errors, equipment failures, critical incidents, and so on. Adherence to practice guidelines and standards

can also be studied during simulated crises. Crisis management behaviour, which includes assertion, communication, leadership, and workload distribution, could be assessed with the help of such simulators. Compared with more traditional methods, use of these simulators allows scoring of performance to be more consistent across examinees. Knowledge, as well as the actual performance of anaesthesia practice can be tested. There are, however, still problems with the internal consistency, validity, and reliability of such evaluations.¹³⁻¹⁵

Less than half of respondents had had some opportunity for research and study at the time of the survey, although a formal research project is mandatory for completion of training for both the HKCA and the ANZCA. In an UK survey of attitudes of junior anaesthetists to research, approximately half of the respondents were involved actively in research.¹⁶ Most of these had publications without any formal teaching in research methods, and expressed the view that publications were essential to improve their curriculum vitae for future job applications.

Concerns have been raised about the lack of originality or significance of recent anaesthesia research.¹⁷ Pressure to publish research may lead to work of questionable quality and there is little proof that achievement in research correlates with clinical skills. Current problems with the formal project requirement include:

- (1) Trainees reporting they have insufficient time to undertake research in addition to clinical duties and studying for examinations;
- (2) Frequent changing of hospitals during rotations leading to inadequate time being spent in one hospital in order to complete the project;
- (3) Rotations including general hospitals, where resources and facilities for research are not as accessible as in teaching hospitals;
- (4) A lack of formal teaching of research methodologies; and
- (5) Production of poor quality research.

It would seem that the formal project objectives could be better served by formal teaching of research methods, presentation methods, and objective data analysis.¹⁸

Twenty-six percent of respondents indicated they plan to practise Intensive Care Medicine after completion of specialist training in anaesthesia (Fig 4). This finding is similar to the Australian trend, where an increasing number of trainees undertake intensive

care training in conjunction with some training in anaesthesia.¹⁹ Currently, recognition of intensive care specialist training via the anaesthesia route requires completion of a specified training period and the passing of the Fellowship examination in Intensive Care. Twenty-two percent of respondents intend to practise pain management as a subspecialty. This may result in increasing demand for recognised training posts for the Diploma of Pain qualification.

Studies have been undertaken to identify the characteristics of residents who apply to anaesthesia programmes, and to elicit the factors likely to be associated with success in the training programme. It has been found that, apart from the usual academic achievements such as grades, personality factors such as social skills, assertiveness, sensitivity, and emotional stability also play an important role in the prediction of success.²⁰ Given the stability of personality traits, preadmission personality assessment might assist those who have the task of selecting trainees in predicting their likely future performance. Nearly a quarter of respondents indicated they would change careers if given the opportunity. This may reflect unrealistic expectations and inadequate knowledge of what a medical career entails, and should be considered by medical schools in their selection process.

Anaesthetists perceive their specialty to be a very stressful one. It has been stated that stress arises when there is a perceived imbalance between demands being made on an individual and ability to meet that demand.²¹ In 1980, Reeve²² analysed the personality profiles of a sample of anaesthetists, judging that 20% were 'unstable'. These individuals demonstrated high anxiety, insecurity, impulsiveness, and poor self-control, and were at increased risk of impaired decision making and unsatisfactory behaviour. Their personality profiles were shown to be similar to those at increased risk of attempted suicide.

Although the risk of suicide in anaesthetists has been found to be no higher than the risk of doctors in general, the incidence of drug and alcohol misuse, early retirement, and death in post have been shown to be increased in anaesthetists.²¹ Anaesthetists often state that they feel at the mercy of their surgical colleagues and of their job patterns (lack of control). To manage these stresses, Dickson²³ suggested that the skills of communication, assertiveness, conflict management, and time management should be incorporated into training programmes. After a traumatic experience or an anaesthetic mishap, opportunities should be available for the trainee to talk about the issues with

senior colleagues or with a professional adviser. Personal counselling, or workshops should be offered to anaesthetists under stress. This need has been recognised in other countries.²⁴ There is a general lack of public awareness in Hong Kong concerning the skills and role of anaesthetists.²⁵ Public education, by anaesthetists, could be undertaken during preoperative and postoperative visits. With the increasing emphasis on the role of anaesthetists as perioperative physicians, and the expanded role of anaesthetists in Intensive Care and chronic and acute pain management, it is likely that public appreciation and the professional esteem of anaesthetists will increase in the future.

Conclusion

As suggested in an editorial on trainee representation, "if you want to know how best to train anaesthetists, you could do worse than ask the trainees..."²⁶ this paper has attempted to profile anaesthetic trainees currently working in Hong Kong and identify the reasons why they chose the specialty of anaesthesia. Concerns expressed by anaesthetists in training have also been highlighted. Despite these concerns aired, 84% of respondents reported job satisfaction as 'reasonable' to 'good'.

The survey highlights the benefits of improving communication between trainees and the HKCA. Communication could be enhanced by having appropriate channels for feedback, possibly via supervisors of training or the formation of an organisation equivalent to the British Group of Anaesthetists in Training in the UK. Teaching of assertive communication skills may also be beneficial to improve relationships with colleagues and the public. Trainee anaesthetists are important members of the anaesthetic community. It is these individuals who will play an increasingly important role in shaping the future of anaesthesia practice in Hong Kong in the years to come.

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