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Objective assessment of surgical performance and its impact on a national selection programme of candidates for higher surgical training in plastic surgery[☆]

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Received 12 September 2007; accepted 9 June 2008

KEYWORDS

Selection;
Technical skills;
Objective assessment;
Validation;
Higher surgical training
(HST)

Summary Objective: The objective of this study was to develop and validate a transparent, fair and objective assessment programme for the selection of surgical trainees into higher surgical training (HST) in plastic surgery in the Republic of Ireland.

Methods: Thirty-four individuals applied for HST in plastic surgery at the Royal College of Surgeons in Ireland (RCSI) in the academic years 2005–2006 and 2006–2007. Eighteen were short-listed for interview and further assessment. All applicants were required to report on their undergraduate educational performance and their postgraduate professional development. Short-listed applicants completed validated objective assessment simulations of surgical skills, an interview and assessment of their suitability for a career in surgery.

Results: When applicants' short-listing scores were combined with their interview scores and assessment of their suitability for a career in surgery, individuals who were selected for HST in plastic surgery performed significantly better than those who were not ($P < 0.002$). However, when the assessment of technical skills scores were added the significance level of this difference increased further ($P < 0.0001$) as did the statistical power of the difference to 99.9%, thus increasing the robustness of the selection package.

Conclusion: The results from this study suggest that the assessment protocol we used to select individuals for HST in plastic surgery reliably and statistically significantly discriminated between the performances of candidates.

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[☆] Data from this paper was presented at the summer meeting of the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS) Liverpool, UK, 2008, and at the 54th annual meeting of the Plastic Surgery Research Council, Illinois, USA, 2008 (winner of the Shenaq International Research Award).

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The training of surgeons is a prolonged and costly undertaking. Consequently, the aim of a selection process is to identify and select those trainees most likely to develop into competent and effective surgeons. The traditional methods of selection for surgical training have depended on the applicants' academic record, the impression given at the interview, the references submitted and 'a combination of opportunity and luck'.¹ This is probably due to the fact that these are easy markers to measure and are used as an assumed indicator of ability. Strong academic achievement in medical school is likely an index of scholarly activity that persists throughout a surgeon's professional life. However, Bann and Darzi have shown that reliance on academic achievement alone poses serious problems.² At no stage is there an assessment of technical ability, despite this being of paramount importance. This subjective selection process is no longer desirable or acceptable.

In the current medico-legal climate, medical skills, particularly technical skills in surgery, have come under increased scrutiny, in part due to several high profile cases where poor outcomes were attributed to inadequate technical ability. The Kennedy Report (UK)³ and The Institute of Medicine (US) report 'To err is human'⁴ have highlighted clinical underperformance by the medical profession. These and other cases involving surgical error have focused the spotlight on the adequacy of surgical training and, by extension, the quality of surgical trainees.

In addition, the training of surgeons is expensive and time consuming. Crofts et al. estimated, in 1997, that to increase the proportion of operations undertaken by trainees from the current 30% to the recommended 70%, would require an extra 270 theatre days (or £1.3m) yearly.⁵ In the US, the estimated cost of training a surgical resident in 1998 was \$47 970 USD per resident per year.⁶ When this figure was extrapolated to all surgical residents in the US, the total cost of training was \$53 million USD.

Therefore, in the current climate of financial accountability and demands for 'value for money' by the health care regulatory bodies, it is increasingly important that the investment made in surgical trainees yields positive outcomes, i.e. competent consultant surgeons.

To achieve this goal, medicine in general and surgery in particular must develop a selection and assessment system that can better discriminate between candidates on factors that are known or suspected to be good predictors of success in training and clinical practice.

Therefore, the introduction of a better selection, training and assessment programme for junior surgeons has become a priority. This selection system should be fair, equitable and transparent. Such a system would help ensure that the best candidates had been selected and were capable of undergoing the rigors of training. A transparent system would also serve to assure the public, regulatory authorities and candidates themselves that this is the case.

Initially, a selection process must define what is required for successful trainee performance and then systematically and objectively evaluate these attributes. Tarico et al.⁷ characterised what skills were necessary for a successful radiology trainee and then designed a selection form based upon evaluation of these characteristics. Attributes included academic record, clinical experience, psychomotor skills,

interpersonal qualities, etc. While there is little consensus regarding the appropriate weighting of these components, it is clear that no single attribute can be used in isolation to determine which applicant is selected for HST.

Therefore, the purpose of the study reported here was to develop and validate an assessment programme for the selection of surgical trainees into higher surgical training in plastic surgery in the Republic of Ireland and to consider the impact that the addition of technical skills assessment would make on the selection process.

Methods

The selection process used is based on methodology previously described by the senior author.⁸ Applicants for HST in plastic surgery for 2006 and 2007 applied to RCSI on a standard, structured application form which covered all criteria which were to be taken into account in the marking process (Table 1).

Additional copies of curriculum vitae were not required as all relevant information was on the application form. Candidates were encouraged to submit their application electronically (i.e. online), although they had an option to apply by regular post.

Candidates were scored for undergraduate education, postgraduate development, clinical surgery and research and academic surgery for short-listing using detailed marking descriptors which gave precise details of how marks should be awarded in each category.

Candidates had to submit official transcripts of their academic results. The selection committee then met to check the scores and the top scoring candidates in each year were short-listed for interview. Short-listing was performed purely on the basis of objective scores.

As agreed by the Irish Association of Plastic Surgeons and encouraged by RCSI, surgical skills assessment (SSA) was introduced as part of the selection process for plastic surgery HST for the July 2006 intake. Before attending for interview all short-listed candidates for 2006 and 2007 intakes were invited to attend the National Surgical Training Centre at the RCSI, Dublin, Ireland for SSA.

Subjects

There were 34 applicants for HST in plastic surgery during the two academic years [$n = 19$ in 2005–2006 (male = 12, female = 7); $n = 15$ in 2006–2007 (male = 7, female = 8)]. The mean age of applicants was 30.8 years (SD = 1.6 years).

Surgical skills assessment

Each short-listed candidate performed six surgical procedures within a fixed time period. The skills stations were chosen to reflect generic plastic surgical procedures. At the start of the assessment day, assessor plastic surgeons were given a training session on the details of their skills stations and explicit instructions regarding the importance of objective assessment. To strengthen the reliability of scoring, candidates performance was scored against pre-

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