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Editorial

Factors predicting success in the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination: a summary for OMFS

Abstract

The Intercollegiate Membership of the Royal College of Surgeons (MRCS, parts A and B) is a mandatory examination for entry into higher surgical training in the UK. We investigated which factors predict success in both the written (Part A) and clinical (Part B) parts of the examination, and provide a summary for oral and maxillofacial surgeons (OMFS). All UK graduates who attempted both parts between 2007 and 2016 were included. There was a positive correlation between the scores in parts A and B ($r=0.41$, $p<0.01$). For Part A, men (odds ratio (OR) 2.78; 95% CI 1.83 to 4.19), white candidates (OR 1.70; 95% CI 1.52 to 1.89), and younger graduates (under 29 years of age), were more likely to pass (OR 2.60; 95% CI 1.81 to 3.63). Foundation year one (FY1) doctors had higher pass rates than all other grades (e.g. core surgical trainee 2 vs. FY1 OR 0.50; 95% CI 0.32 to 0.77). The number of attempts at Part A and the final score, as well as ethnicity and stage of training, were independent predictors of success in Part B. Candidates who did well in Part A were more likely to do well in Part B. Several independent predictors of success were identified, but only the stage of training and ethnicity were common predictors in both parts. Higher scores obtained by younger candidates might be relevant to OMFS trainees who take Part A after studying medicine as a second degree.

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summarised the findings from a comprehensive MRCS study that was recently published in *The Surgeon*¹ and provide an update for oral and maxillofacial surgeons on the latest research concerning the validity of the examination.

Introduction

The Intercollegiate Membership of the Royal College of Surgeons (MRCS), which is delivered by all four surgical colleges of the United Kingdom (UK) and Ireland, is a two-part (A and B) high-stakes, mandatory postgraduate surgical examination that is taken annually by about 6000 doctors in the UK and overseas.^{1–3} However, unlike other postgraduate medical examinations, including Membership of the Royal Colleges of Physicians (MRCP) and Membership of the Royal College of General Practitioners (MRCGP), little is known about the factors that affect performance.

We therefore describe the association between the written Part A and the clinical Part B of the examination, and report several independent predictors of success. We have

Methods

All UK medical graduates who had attempted both parts of the MRCS from September 2007 to February 2016 were included. Data were extracted from the prospectively collected intercollegiate MRCS database held by the English College. We obtained a complete MRCS history for each candidate's which included performance in parts A and B, date of graduation, date of exam, date of birth, number of attempts at each part, and self-declared sociodemographic details (sex, first language, and ethnicity).

All analyses were conducted with the help of IBM SPSS Statistics for Windows, version 24.0 (IBM Corp). Pearson's

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Table 1

Logistic regression model for pass at first attempt in Part A of the MRCS for UK medical graduates (n = 5932).

Independent variable	Odds ratio	95% CI
Sex:		
Male compared with female	2.78	1.83 to 4.19
Ethnicity:		
White compared with black and minority ethnic	1.70	1.52 to 1.89
Stage of training:		
FY2 compared with FY1	0.62	0.54 to 0.71
CST1 compared with FY1	0.66	0.56 to 0.79
CST2 compared with FY1	0.50	0.32 to 0.77
48 months or more from graduation compared with FY1	0.47	0.33 to 0.66
Mature medical graduate (≥ 29 years old):		
Young compared with mature	2.60	1.81 to 3.63
Interaction term:		
Mature medical graduate by sex	0.53	0.35 to 0.81
Model constant	0.56	–

MRCS = Membership of the Royal College of Surgeons; FY = foundation year; CST = core surgical trainee; CI = confidence interval.

correlation coefficients were used to examine the linear relation between each part of the exam, and logistic regression analyses were used to identify any potential independent predictors of passing or failing either part.

Results

A total of 7896 UK medical graduates made 11867 attempts at the written Part A of the exam and 4310 of them made 5738 attempts at the clinical Part B. The pass rate for the first attempt at Part A was 61% (4824/7874) and was 72% (3082/4301) for Part B.

There was a significant positive correlation between the scores for the first attempt at parts A and B ($r=0.41$; $p<0.001$).

Part A

Table 1 shows the odds ratios (OR) and 95% confidence intervals (CI) for passing Part A at the first attempt. Men were nearly three times more likely to pass than women (OR 2.78; 95% CI 1.83 to 4.19) and compared with self-declared black and minority ethnic candidates, self-declared white candidates were nearly twice as likely to pass (OR 1.70; 95% CI 1.52 to 1.89).

Younger medical graduates (under 29 years of age at graduation) were nearly three times more likely to pass than older medical graduates (OR 2.60; 95% CI 1.81 to 3.63) and foundation year one (FY1) doctors were more likely to pass Part A than all other trainees (Table 1). The odds of passing Part A decreased by 14% with every additional attempt (OR 0.86; 95% CI 0.80 to 0.92).

Table 2

Logistic regression model for pass at first attempt in Part B MRCS for UK medical graduates (n = 3328).

Variable	Odds ratio	95% CI
Part A exam performance (% above the pass mark)	1.10	1.09 to 1.12
No. of attempts at Part A:		
Two compared with one	0.68	0.54 to 0.86
Three compared with one	0.60	0.43 to 0.84
Four or more attempts compared with one	0.56	0.42 to 0.70
Ethnicity:		
White compared with black and minority ethnic	1.91	1.62 to 2.25
Stage of training:		
CST1 compared with FY1/FY2	1.72	1.30 to 2.28
CST2 compared with FY1/FY2	1.67	1.24 to 2.26
48 or more months compared with FY1/FY2	1.03	0.72 to 1.40
Model constant	0.51	–

MRCS = Membership of the Royal College of Surgeons; FY = foundation year; CST = core surgical trainee; CI = confidence interval.

Part B

White candidates were nearly twice as likely to pass Part B at the first attempt than self-declared black and minority ethnic candidates (OR 1.91; 95% CI 1.62 to 2.25) (Table 2). FY1 and FY2 doctors were more likely to fail Part B at the first attempt than core surgical trainees one (CST1) (OR 1.72; 95% CI 1.30 to 2.28) and CST2 (OR 1.67; 95% CI 1.24 to 2.26).

As the number of attempts needed to pass Part A increased, the odds of passing Part B decreased, with those requiring more than three attempts at greatest risk (OR 0.56; 95% CI 0.42 to 0.70) (Table 2). For every 1% over the pass mark, the chances of passing Part B at the first attempt increased by ten (OR 1.10; 95% CI 1.09 to 1.12). For every additional attempt that was made at Part B, the odds of passing the exam decreased by 30% (OR 0.70; 95% CI 0.61 to 0.81).

Discussion

We have identified several modifiable and non-modifiable predictors of success.

Non-modifiable predictors

Sex

Men were almost three times more likely than women to pass Part A at the first attempt, a pattern seen in many other undergraduate and postgraduate examinations.^{4–6} The reasons for this are likely to be multifactorial, but one could be that men acquire and retain basic scientific knowledge better than women.⁴ However, women outperform men in clinical examinations because they are potentially better communicators.^{4–6} We found no sex-dependent difference for Part B and the reasons for this merit further investigation.

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