Academic performance comparing ethnic minority and White doctors in the UK GP licensing assessment

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Conflicts of interest

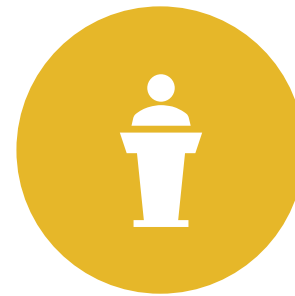RESEARCH AND DEVELOPMENT LEAD FOR ASSESSMENT MRCGP

FUNDING:

NHS
Health Education England

Differential attainment or performance

Consistent differences by candidate (protected) characteristics

Important, controversial

Ethical and legal issues

No clear explanations but theories of why it exists and what to do about it abound

MRCGP and candidate ethnicity

> Consistent differences in performance for IMGs and UK trained ethnic minority candidates in MRCGP and other postgraduate and undergraduate medical examinations

Independent Review of the Membership of the Royal College of General Practitioners (MRCGP) examination

Aneez Esmail
Professor of General Practice

Chris Roberts
Professor of Biostatistics

BMJ

BMJ 2013;347:f5662 doi: 10.1136/bmj.f5662 (Published 26 September 2013)   Page 1 of 10

RESEARCH

Academic performance of ethnic minority candidates and discrimination in the MRCGP examinations between 2010 and 2012: analysis of data

OPEN ACCESS

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Faculty of Medical and Human Sciences, University of Manchester, Manchester M13 9PL, UK

Esmail A, Roberts C. Independent review of the MRCGP examination. University of Manchester 2013.

Esmail A, Roberts C. Academic performance of ethnic minority candidates and discrimination in the MRCGP examinations between 2010 and 2012:analysis of data. BMJ 2013.

Potential factors contributing to performance
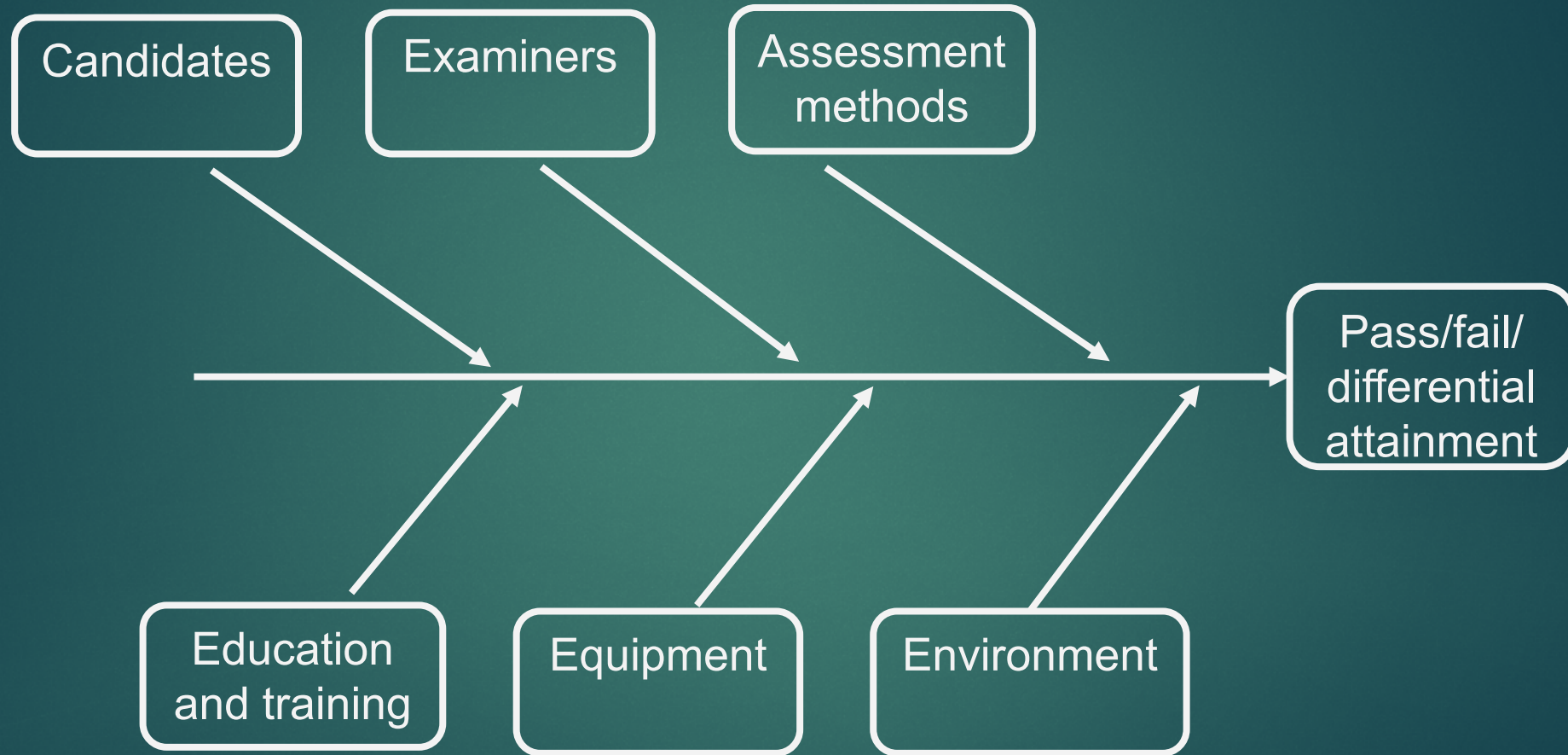
Exam factors

Examiner	Role-player	Psychometric	Case/item
• Examiner pool bias? • Unconscious bias? • Overt discrimination	• Role players unrepresentative? • Role players biased?	• Bias in standard setting?	• Case or item bias?

Candidate/educational factors

| Personal attributes	Psychological factors	Social context	Educational experience
• Culture, ethnicity/nationality • Sex/gender • Age • Specific learning difficulty	• Motivation • Insight • Expectation	• Relationships with educators • Relationships with peers	• School • Undergraduate • Postgraduate • Accommodations for disability or difference

GP licensing in UK

Applied Knowledge Test (AKT)

Clinical Skills Assessment (CSA) /

Recorded Consultation Assessment (RCA)
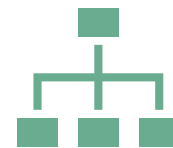
Workplace Based Assessment (WPBA)

Annual Review of Competence Progression (ARCP)

Aim

▶ Aim: to investigate differences in MRCGP performance comparing ethnic minority and White doctors.

▶ Research question: is performance in the MRCGP (AKT, CSA, RCA or WPBA) significantly different in ethnic minority versus White doctors taking into account other factors?

▶ Null hypothesis: no difference in performance between ethnic minority and White doctors.

▶ Ethical approval: University of Lincoln Human Ethics Committee (Reference 2020_3645).

▶ Funding: **NHS**
Health Education England

Methods

Longitudinal design: retrospective data for doctors' performance from selection for GP specialty training in 2016 to licensing test

Linked data: selection, licensing and demographic data

Multivariable logistic regression models: to determine effect of ethnicity on licensing performance

Outcomes:
AKT/CSA/RCA - Pass/Fail
WPBA/ARCP - Standard/Developmental

Covariates: sex, country of primary medical qualification, declared disability and MSRA score bands

Assumptions of no multicollinearity and no outliers checked

ORs represent odds that outcome would occur given a predictor, compared to odds of outcome occurring the absence of that predictor

Pseudo r-squared (pseudo R2): represents certainty with which model can predict dichotomous outcome (y=0 or y=1)
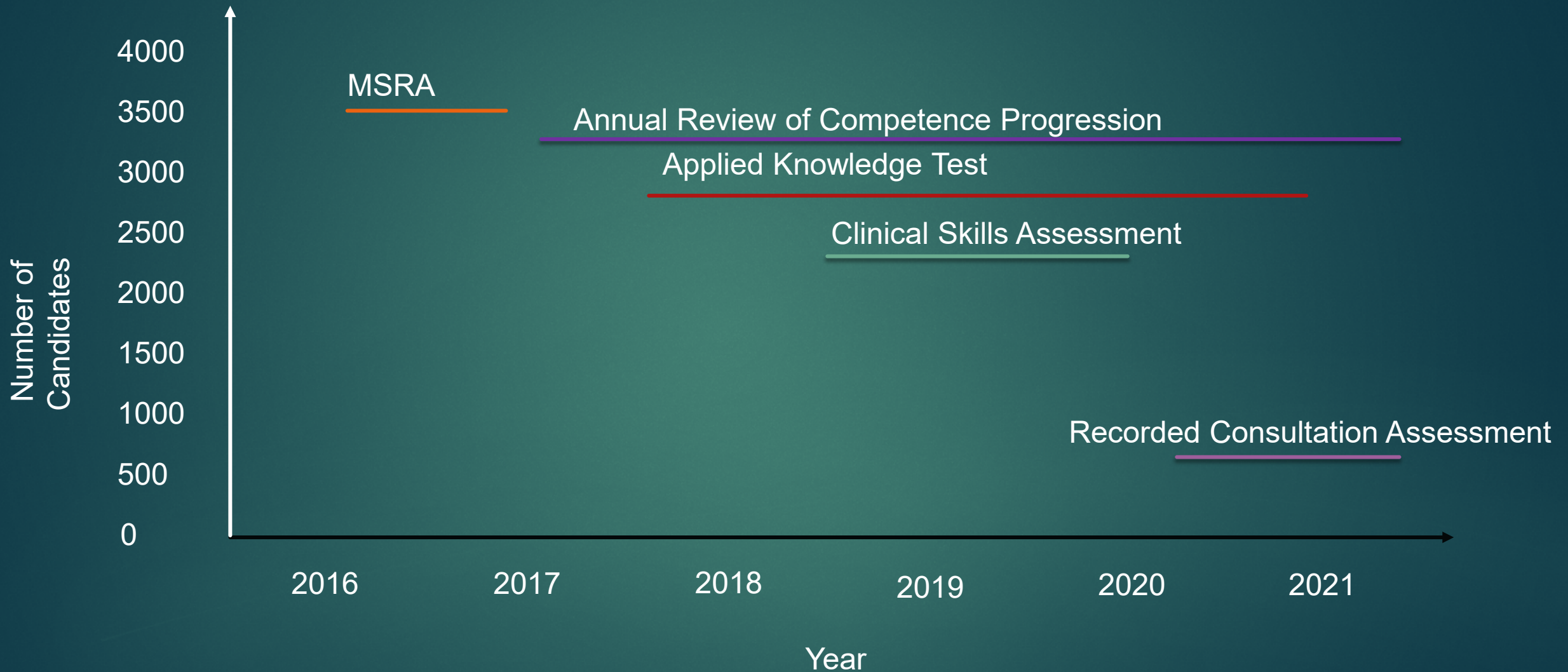
Sample

- 3429 doctors entering GP specialty training in 2016
- AKT 2883 CSA 2313 RCA 545 WPBA–ARCP 3168
- Sex: female 63.8%; male: 36.2%
- Ethnic group: White British 54.0%; minority ethnic 43.0%; mixed 3.0%
- Primary medical qualification: UK 76.8%; non- UK 23.2%
- Disability: declared 12.0%; not declared 88.0%

Percentages failing assessments per MSRA score band
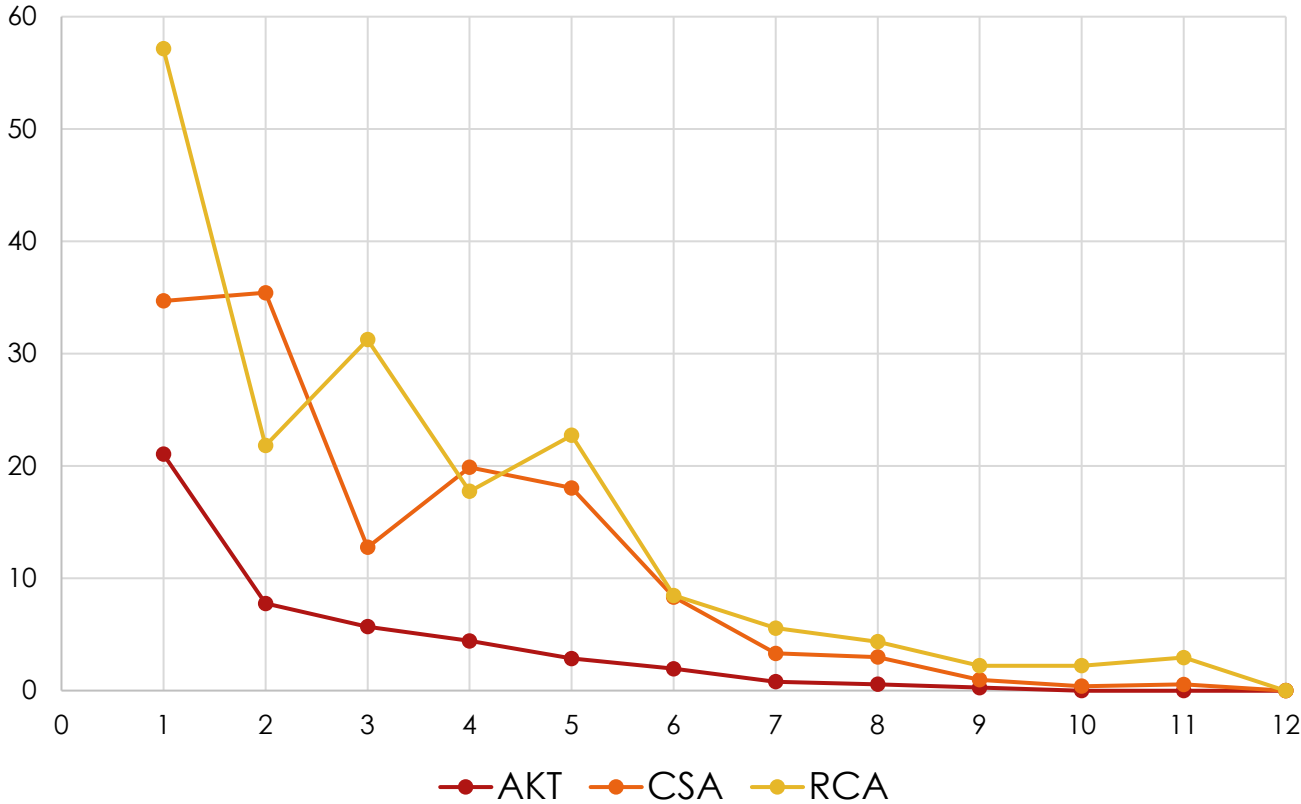
MSRA scores divided into 12 bands:

Band 1: < 400

Band 2: 400 –419

Band 3: 420 - 439

Band 4: 440 – 459

Band 5: 460 – 479

Band 6: 480 – 499

Band 7: 500 – 519

Band 8: 520 – 539

Band 9: 540 – 559

Band 10: 560 – 579

Band 11: 580 – 599

Band 12: 600+

Predictors	AKT pass rates			
	OR	S.E.	95% CI of OR	p-value
Gender (Female)				
Male	1.29	0.40	0.70, 2.36	0.41
Ethnicity (White)				
Ethnic Minority	**2.05**	**0.72**	**1.03, 4.10**	**0.042**
Mixed	1.20	1.30	0.14, 10.00	0.87
Qualification Country (UK)				
Not-UK	1.17	0.46	0.54, 2.54	0.69
Disability (No)				
Yes	0.86	0.32	0.42, 1.77	0.69
MSRA Bands (under 400)				
400 –419	3.47	1.76	1.28, 9.36	0.014
420 – 439	4.29	2.42	1.42, 12.94	0.010
440 – 459	6.86	3.68	2.40, 19.11	<0.001
460 – 479	9.93	5.77	3.18, 31.03	<0.001
480 – 499	15.34	9.86	4.35, 54.08	<0.001
500 – 519	37.53	28.75	8.37, 168.40	<0.001
520 –539	53.30	46.67	9.58, 296.52	<0.001
540 – 559	104.06	117.95	11.28, 959.69	<0.001
Cons	1.69	0.97	0.55, 5.21	<0.001
	pseudoR^2 = 0.13, $X^2(13)$= 56.78, p < 0.001			

N.B. Bands 10, 11, and 12 not included in the model because they perfectly predict passing the AKT

Predictors	CSA pass				RCA pass			
	OR	S.E.	95% CI of OR	p-value	OR	S.E.	95% CI of OR	p-value
Gender (Female)								
Male	**0.58**	**0.12**	**0.39, 0.86**	**0.007**	0.74	0.25	0.37, 1.45	0.377
Ethnicity (White)								
Ethnic Minority	0.72	0.19	0.43, 1.20	0.201	0.48	0.25	0.18, 1.32	0.156
Mixed	/				**0.14**	0.13	0.20, 0.94	0.043
PMQ (UK)								
Not-UK	**0.27**	**0.07**	**0.16, 0.45**	**<0.001**	**0.30**	**0.15**	**0.11, 0.80**	**0.017**
Disability (No)								
Yes	**0.38**	**0.09**	**0.24, 0.61**	**<0.001**	0.58	0.22	0.27, 1.23	0.156
MSRA band (< 400)								
400 – 419	0.92	0.39	0.40, 2.10	0.848	**5.46**	3.40	1.61, 18.51	0.006
420 – 439	2.58	1.29	0.97, 6.88	0.059	**5.98**	4.73	1.27, 28.18	0.024
440 – 459	1.04	0.43	0.47, 2.33	0.915	**5.00**	3.07	1.50, 16.65	0.009
460 – 479	0.99	0.41	0.44, 2.22	0.972	**2.60**	1.53	0.81, 8.24	0.107
480 – 499	1.48	0.67	0.61, 3.60	0.389	**6.24**	4.54	1.50, 25.95	0.012
500 – 519	4.00	2.28	1.31, 12.23	0.015	**5.95**	4.96	1.16, 30.47	0.032
520 – 539	2.47	1.34	0.85, 7.15	0.097	**9.89**	12.15	0.89, 109.88	0.062
540 – 559	/				/			
560 – 579	11.58	12.67	1.36, 98.83	0.025	**9.97**	13.52	0.71, 142.06	0.090
580 – 599	6.86	7.53	0.80, 58.98	0.080	**8.03**	10.16	0.67, 95.92	0.100
600+	/				/			
Cons	17.76	8.66	6.83, 46.20	<0.001	**7.69**	6.30	1.55, 38.28	0.013
	pseudoR^2 = 0.21, X^2(13)= 178.87, p < 0.001				pseudoR^2 = 0.18, X^2(14)= 54.75, p < 0.001			

Number of ARCP developmental outcomes

	B	S.E.	95% CI of B	p-value
Gender (Female)				
Male	0.26	0.04	0.19, 0.34	<0.001
Ethnicity (White)				
Ethnic Minority	0.08	0.04	-0.00, 0.17	0.064
Mixed	-0.02	0.10	-0.22, 0.18	0.864
Qualification Country (UK)				
Not-UK	0.28	0.06	0.17, 0.39	<0.001
Disability (No)				
Yes	0.51	0.06	0.40, 0.62	<0.001
MSRA Bands (under 400)				
400 – below 420	-0.15	0.13	-0.41, 0.11	0.270
420 – below 440	-0.48	0.14	-0.75, -0.21	<0.001
440 – below 460	-0.24	0.13	-0.50, 0.00	0.054
460 – below 480	-0.42	0.13	-0.66, -0.17	0.001
480 – below 500	-0.60	0.13	-0.85, -0.35	<0.001
500 – below 520	-0.65	0.13	-0.90, -0.40	<0.001
520 – below 540	-0.73	0.13	-0.99, -0.44	<0.001
540 – below 560	-0.70	0.13	-0.96, -0.44	<0.001
560 – below 580	-0.71	0.14	-0.98, -0.45	<0.001
580 – below 600	-0.73	0.14	-1.01, -0.46	<0.001
600 and over	-0.73	0.16	-1.03, -0.42	<0.001
Cons	0.66	0.13	0.41, 0.91	<0.001

pseudo $R^2 = 0.21$, $F_{(16, 1953)} = 32.95$, $p < 0.001$

Predictors — Presence of ARCP developmental outcomes

Predictors	OR	S.E.	95% CI of OR	p-value
Gender (Female)				
Male	0.45	0.06	0.35, 0.58	<0.001
Ethnicity (White)				
Ethnic Minority	0.76	0.12	0.56, 1.04	0.086
Mixed	0.96	0.43	0.40, 2.33	0.931
Qualification Country (UK)				
Not-UK	0.40	0.07	0.29, 0.55	<0.001
Disability (No)				
Yes	0.29	0.05	0.21, 0.41	<0.001
MSRA Bands (under 400)				
400 – below 420	0.89	0.32	0.44, 1.80	0.749
420 – below 440	1.83	0.68	0.88, 3.81	0.109
440 – below 460	1.27	0.44	0.66, 2.49	0.469
460 – below 480	1.67	0.57	0.85, 3.28	0.134
480 – below 500	2.17	0.77	1.08, 4.33	0.029
500 – below 520	2.68	0.98	1.31, 5.47	0.007
520 – below 540	5.90	2.42	2.63, 13.20	<0.001
540 – below 560	6.20	2.74	2.61, 14.76	<0.001
560 – below 580	6.22	2.87	2.52, 15.39	<0.001
580 – below 600	15.01	10.15	3.99, 56.49	<0.001
600 and over	10.65	8.53	2.22, 51.15	0.003
Cons	4.44	1.60	2.19, 9.01	<0.001

pseudo $R^2 = 0.23$, $X^2(16) = 455.88$, $p < 0.001$

Limitations

▶ Candidates on training extensions, maternity leave, etc. may have successfully completed training after study end.

▶ Did not take into account differences by medical school, country of primary qualification, ethnic group, or nature of disability.

▶ Not all participants who were unsuccessful in licensing tests would have had opportunity to take them the permitted four times. For AKT and CSA this number was small (only 6% of candidates), but it involved all participants for the RCA.

Conclusions

▶ First UK study to link performance at selection with all outcomes at licensing for doctors undertaking speciality training for general practice.

▶ Doctors' **ethnicity did not reduce the chance of passing GP licensing tests** once sex, place of primary medical qualification, declared disability and selection (MSRA) scores taken into account: prior attainment and IMG status main factors influencing performance on licensing assessments.

▶ Specific learning difference, male sex and IMG status associated with poorer performance in CSA and WPBA-ARCP.

▶ MSRA scores for doctors at selection predicted GP licensing outcomes for MRCGP AKT, CSA, RCA, and WPBA-ARCP within five years of starting training. Doctors scoring below optimal MRSA threshold (500) may need additional support during training to maximise chances of achieving licensing.

Implications

Causes of differential attainment amenable to intervention

▸ Scores at selection

▸ Early assessment, provision of support and reasonable adjustments for dyslexia

▸ Addressing prior differences in education and training including non-UK PMQ

Further research

▸ Educational interventions incorporating selection scores, dyslexia support and reasonable adjustments, educational and training deficits

Thank you

Contact: nsiriwardena@lincoln.ac.uk Research Centre: https://www.cahru.org.uk/

Research

Aloysius Niroshan Siriwardena, Vanessa Botan, Nicki Williams, Kim Emerson, Fiona Kameen, Lindsey Pope, Adrian Freeman and Graham Law

Performance of ethnic minority versus White doctors in the MRCGP assessment 2016–2021:

a cross-sectional study

Siriwardena AN, Botan V, Williams N, Emerson K, Kameen F, Pope L, Freeman A, Law GR. Academic performance of ethnic minority versus White doctors in the MRCGP assessment 2016-2021: cross sectional study. BJGP 2023; 73 (729): e284-e293. DOI: 10.3399/BJGP.2022.0474.