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Demographic characteristics of doctors who intend to follow clinical academic careers: UK national questionnaire surveys

Fay Smith, Trevor W Lambert, Michael J Goldacre

UK Medical Careers Research Group, Nuffield Department of Population Health, University of Oxford, Oxford, UK

Correspondence to
Trevor W Lambert, UK Medical Careers Research Group, Nuffield Department of Population Health, University of Oxford, Old Road Campus, Oxford OX3 7LF, UK;
trevor.lambert@dph.ox.ac.uk

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ABSTRACT

Objectives It is well recognised that women are underrepresented in clinical academic posts. Our aim was to determine which of a number of characteristics—notably gender, but also ethnicity, possession of an intercalated degree, medical school attended, choice of specialty—were predictive of doctors' intentions to follow clinical academic careers.

Design Questionnaires to all UK-trained medical graduates of 2005 sent in 2006 and again in 2010, graduates of 2009 in 2010 and graduates of 2012 in 2013.

Results At the end of their first year of medical work, 13.5% (368/2732) of men and 7.3% (358/4891) of women specified that they intended to apply for a clinical academic training post; and 6.0% (172/2873) of men and 2.2% (111/5044) of women specified that they intended to pursue clinical academic medicine as their eventual career. A higher percentage of Asian (4.8%) than White doctors (3.3%) wanted a long-term career as a clinical academic, as did a higher percentage of doctors who did an intercalated degree (5.6%) than others (2.2%) and a higher percentage of Oxbridge graduates (8.1%) than others (2.8%). Of the graduates of 2005, only 30% of those who in 2006 intended a clinical medicine career also did so when re-surveyed in 2010 (men 44%, women 12%).

Conclusions There are noteworthy differences by gender and other demographic factors in doctors' intentions to pursue academic training and careers. The gap between men and women in aspirations for a clinical academic career is present as early as the first year after qualification.

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INTRODUCTION

Internationally, recruitment to clinical academic posts can be difficult[1–4]: sometimes there are too few excellent candidates for available jobs. It is also well recognised that, at least in the USA and Europe, women are underrepresented in clinical academic posts and in leadership positions in academic medicine.[5–7]

In addition to the concerns about the underrepresentation of women, other concerns in the UK include the fact that the clinical academic workforce is ageing with possible shortfalls in its succession; the possibility of a reduction in numbers of medical students taking intercalated degrees (science degrees taken during the years of study for the medical degree); immigration restrictions on academics from outside the European Union; and the lack of flexible working patterns that might otherwise encourage more women into clinical academia.[8–11] In the USA, the number of women academic physicians increased between 1997 and 2008, but by 2008 women were still underrepresented in senior academic positions.[7] In the UK, there was a similar increase in the number and percentage of women clinical academics between 2004 and 2012, but, in 2012, just 28% of all clinical academics were women and only 16% of professors were women.[12] A US study found that only 17.5% of editorial board members are women[11] and women are less likely to be senior authors in peer-reviewed British journals.[13] In 2007, the UK Women in Clinical Academia Working Group recommended greater flexibility for clinical academics (career breaks, ability to work less than full time), more encouragement for women to take up leadership positions and more visible role models and mentors.[10] These, and other initiatives, such as return to work grants, may be having an impact in increasing the numbers of women in clinical academia, but there is also a cohort effect on increasing numbers with more women doctors graduating from medical school than ever before.[12]

Doctors in the UK who undertake an intercalated degree gain an advantage over those who do not when competing for jobs.[14] There is also evidence that doctors who hold an intercalated degree are more likely to pursue an academic career.[1 15] Despite the benefits of taking an intercalated degree, there is concern that fewer students are doing so.[9 14] The reasons for this include not wishing to study for an extra year or to incur more student debt.[14]

In box 1, we have summarised the progression of training and careers in clinical academic medicine, including the current use of terminology, in the UK. In multipurpose national surveys of the graduates of 2005, 2009 and 2012 from all UK medical schools, we asked about future career intentions including doctors' intentions about entering clinical academic medicine. Our aim in this paper is to determine which of a number of characteristics—gender, ethnic group, medical school attended, possession of an intercalated degree—were predictive of doctors' intention to follow a clinical academic career.

METHODS

The surveys

We surveyed the UK medical graduates of 2005, 2009 and 2012 one year after qualification and surveyed the graduates of 2005 five years after qualification in 2010. Questionnaires were sent to all medical graduates from every UK medical school,

Box 1 Clinical academic training and careers in the UK

Some UK medical students undertake a science degree in parallel with their medical degree. This is called an intercalated degree. These students typically take a further year to graduate with their medical degree. A higher proportion of them subsequently apply for clinical academic training than of those who do not undertake an intercalated degree. It is also possible to do a short placement in clinical academia after graduation, and prior to committing for specialist training. This may help the doctor to decide whether to train as a clinical academic.

Clinical academic training is a distinct, separately structured training programme. It includes a substantial research component alongside clinical training in the chosen clinical specialty. Doctors in academic training are typically called 'academic fellows'. Clinical academics typically have an academic job title and employer (eg, lecturers, senior lecturers and, as they progress, readers and professors employed by universities). These job titles are usually held in parallel with a clinical service job title and role (eg, specialist registrar, consultant, general practitioner (GP) in the National Health Service (NHS)).

Holders of career grade posts in the NHS in the UK, who are in posts that are not primarily academic, may, nonetheless, have an academic component of their work; indeed, some will hold honorary academic university contracts. With or without honorary academic contracts, many doctors will do at least a small amount of teaching, and some will also undertake research. We have categorised the career intentions of the respondents to our surveys in five groups, namely clinical academic posts (those employed primarily as lecturers, senior lecturers, readers, professors), clinical service posts without teaching or research, clinical service posts with some teaching responsibility, clinical service posts with some research time and clinical service posts with some teaching and research. Respondents to our surveys will be aware of the UK distinction between clinical academic posts, which are typically university posts, and clinical service posts (generally, in the NHS) with a research or teaching component that are not clinical academic posts.

Clinical academics are responsible for teaching the undergraduate curriculum and make substantial contributions to postgraduate medical training in addition to undertaking medical research.

with postal and email options for completion. Up to four reminders were sent to non-respondents. The surveys covered a variety of topics, including career intentions, and our methods have been described in detail elsewhere.[16 17]

Trainee doctors in the UK undertake 2 years of foundation training (comprising an F1 and an F2 year), before being admitted to specialty training. Our first year surveys were undertaken at the end of the F1 year, a time when doctors were considering their choice of specialty training following the F2 year.

The questions

We asked the cohorts of 2005 and 2012, "Have you applied for an academic F2 placement?" (yes or no). We asked all cohorts two further questions about their intentions regarding academic medicine. The first was 'After F2, do you intend to apply for an academic training post?' (answers were chosen from: *yes-academic specialist*, *yes-academic GP*, *no* or *undecided)*. The second was 'If you intend to practise medicine, in your long-term career do you intend to work mainly in': answers were chosen from *clinical service posts without teaching or research*, *clinical posts with some teaching responsibility*, *clinical posts with some research time*, *clinical posts with some teaching and research*, *clinical academic posts* and *undecided*. For analysis for this paper, we recoded the answers to this question into three categories: *clinical academic posts*, *clinical posts with some research* (comprising answers of *clinical posts with some research time* and *clinical posts with some teaching and research*) and *clinical posts without research* (comprising answers of *clinical service posts without teaching or research* and *clinical posts with some teaching responsibility*). This question was asked again in the study of the 2005 cohort when they were surveyed 5 years after qualification.

All three cohorts were asked, "Have you made up your mind about your choice of long-term career?" with possible responses of *definitely*, *probably* or *not really*. They were also asked about their preferred choice of clinical specialty, or non-medical job if applicable, for their long-term career.

Data analysis

The data were analysed by univariate cross-tabulation. To test statistical significance, we used χ^2 statistics (reporting Yates's continuity correction where there was only one degree of freedom), binary and multinomial logistic regression. Only variables that were significant as single variables using univariate analysis were subsequently used in the multivariate analysis: in this, we assessed the individual effect of each variable after allowing for the effects of others. Respondents were grouped according to gender; ethnic group (Asian, White and Other); whether or not they had an intercalated degree; region/type of clinical medical school (England old schools, England new schools, London, Oxbridge, Scotland, Northern Ireland and Wales); and first choice of specialty, grouped as hospital specialties led by physicians, surgical specialties, other hospital specialties combined and general practice.

RESULTS

Response rates

Survey questionnaires were sent to 17 126 UK doctors covering all three cohorts. After excluding doctors who were untraceable, were known to have died or who declined to participate, response rates 1 year after qualification were 63% (3128/4939) for the 2005 cohort, 47% (2918/6250) for the 2009 cohort and 46% (2413/5262) for the 2012 cohort. Forty-nine per cent (2363/4841) of the 2005 cohort responded in year 5. Shortened questionnaires that omitted some questions about academic careers were completed by some respondents; this reduced the number of respondents to 2547 for the 2009 cohort and 2348 for the 2012 cohort.

Intentions to apply for an academic placement in the F2 year

Applications for academic F2 placements were significantly lower among the 2012 cohort (12.4%; 285/2303) than among the 2005 cohort (20.9%; 649/3099) ($\chi^2_1=67.2$, $p<0.001$). Among the 2005 cohort, 20.0% of women (385/1927) and 22.5% of men (264/1172) applied for academic placements ($\chi^2_1=2.7$, $p=0.10$). In the 2012 cohort, 9.8% of women (142/1448) and 16.7% of men (143/855) did so ($\chi^2_1=23.1$, $p<0.001$).

Intentions to apply for an academic training post after F2

Combining all cohorts, 9.5% (726/7623) of respondents intended to apply for clinical academic training after F2, either as an academic specialist in the hospital specialties (7.7%) or as a general practitioner (GP) (1.8%) (table 1). Most respondents (64.3%; 4903/7623) did not wish to do so and the rest (26.2%; 1994/7623) were undecided. The cohorts differed in their responses (χ^2_6=221.7, p<0.001). Graduates of 2009 were less likely than those of 2005 to choose academic specialist training (6.0% compared with 9.1%). Graduates of 2009 and 2012 were less likely than those of 2005 to choose academic GP training (1.5% compared with 2.5%) and less likely to choose academic specialist training. Taking all cohorts together, responses from men and women differed (χ^2_3=150.8, p<0.001): a higher percentage of men (13.5%; 368/2732) than women (7.3%; 358/4891) wanted an academic training post (specialist or GP). Men were more likely than women to want to apply for academic specialist training (12.1% men, 5.2% women) and men were less likely than women to want to apply for academic GP training (1.4% men, 2.1% women). Responses from men and women followed a similar pattern in each cohort, but the difference between the percentage of men and women who wanted to apply for academic GP training narrowed in the 2009 and 2012 cohorts.

Long-term career intentions

All cohorts were asked which kind of post they intended to work in for their long-term career. 45.3% (3586/7917) said that they wanted to work mainly in 'clinical posts with some teaching responsibility', 35.5% (2807/7917) wanted to work in 'clinical posts with some teaching and research', 8.7% were undecided, 3.6% wanted a service post with neither teaching nor research and 3.6% wanted a clinical academic post. Men were more likely than women to want a clinical academic career (6.0% men, 172/2873; 2.2% women, 111/5044; all cohorts combined). Over the three cohorts, 111 female and 172 male respondents intended, 1 year after graduation, to pursue a clinical academic career. Assuming that the respondents are a random sample of the entire cohorts, with respect to intention to work in academia, we estimate that over the whole of the three cohorts, 225 women and 413 men intended to enter clinical academia. Similarly, 1844 women and 1233 men respondents intended to enter a career with some research component (table 2). Scaling these numbers for the whole cohorts, 3738 women and 2962 men intended to undertake research.

Qualifiers of 2009 were less likely to want a clinical academic career (2.5%) than those of 2005 (4.2%) or 2012 (3.9%). Other combinations of career intention are shown in table 2.

Comparison of intentions to pursue an academic career, comparing choices 1 and 5 years after graduation

Of 76 doctors who specified that they wanted a clinical academic career in their replies in year 1, only 23 (30%) did so in year 5. Men were more likely to maintain a choice for a clinical academic career (44%; 19/43) than women (12%; 4/33); χ^2_1=9.1, p=0.003, table 3. Of 80 doctors who specified in year 5 that they wanted a clinical academic career, only 23 (29%) had done so in year 1; this percentage was higher for men (40%; 19/48) than for women (12%; 4/32); χ^2_1=6.9, p=0.01, table 3. Other combinations of career preference are shown in table 3.

We also looked at intention to undertake posts that involved teaching, regrouping the data in table 3 into posts with some teaching but no research, posts with both teaching and research and posts without teaching or research. Among those who chose posts with teaching and research in year 1, in year 5, 55% (175/316) of men compared with 42% (179/429) of women also chose posts with both teaching and research; 36% of men and 49% of women chose posts with teaching but no research; and 8% of men and 9% of women chose posts with no teaching.

Intentions to apply for an academic training post after F2: multivariate modelling

We further analysed the factors affecting the choice of academic training after F2 (the data in table 1). Four response categories were reduced to two, by combining those who intended to apply for academic specialist training and GP training into one group and those who did not wish to apply for academic training or were undecided about doing so into a second group. A binary logistic regression model was fitted with 'intention to apply for an academic training post' as the dependent outcome, and cohort year, gender, ethnic group, intercalated degree

Table 1 Intention to apply for academic training after the F2 year: responses from UK medical graduates of 2005, 2009 and 2012 at 1 year after graduation

	Yes, academic specialist			Yes, academic GP			No			Undecided			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
All															
Count	330	255	585	38	103	141	1580	3323	4903	784	1210	1994	2732	4891	7623
Per cent	12.1	5.2	7.7	1.4	2.1	1.8	57.8	67.9	64.3	28.7	24.7	26.2	100.0	100.0	100.0
2005															
Count	139	119	258	17	53	70	506	1044	1550	377	579	956	1039	1795	2834
Per cent	13.4	6.6	9.1	1.6	3.0	2.5	48.7	58.2	54.7	36.3	32.3	33.7	100.0	100.0	100.0
2009															
Count	89	62	151	11	26	37	592	1282	1874	171	303	474	863	1673	2536
Per cent	10.3	3.7	6.0	1.3	1.6	1.5	68.6	76.6	73.9	19.8	18.1	18.7	100.0	100.0	100.0
2012															
Count	102	74	176	10	24	34	482	997	1479	236	328	564	830	1423	2253
Per cent	12.3	5.2	7.8	1.2	1.7	1.5	58.1	70.1	65.6	28.4	23.0	25.0	100.0	100.0	100.0

GP, general practitioner.

Table 2 Long-term career intention regarding academic training: UK medical graduates of 2005, 2009 and 2012 1 year after graduation

	Clinical service posts without teaching or research			Clinical posts with some teaching responsibility			Clinical posts with some research time			Clinical posts with some teaching and research			Clinical academic posts			Undecided			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
All																					
Count	92	192	284	1148	2438	3586	103	167	270	1130	1677	2807	172	111	283	228	459	687	2873	5044	7917
Per cent	3.2	3.8	3.6	40.0	48.3	45.3	3.6	3.3	3.4	39.3	33.2	35.5	6.0	2.2	3.6	7.9	9.1	8.7	100	100	100
2005																					
Count	35	61	96	390	834	1224	55	69	124	466	678	1144	73	55	128	127	204	331	1146	1901	3047
Per cent	3.1	3.2	3.2	34.0	43.9	40.2	4.8	3.6	4.1	40.7	35.7	37.5	6.4	2.9	4.2	11.1	10.7	10.9	100	100	100
2009																					
Count	30	73	103	375	859	1234	32	49	81	329	516	845	36	26	62	43	121	164	845	1644	2489
Per cent	3.6	4.4	4.1	44.4	52.3	49.6	3.8	3.0	3.3	38.9	31.4	33.9	4.3	1.6	2.5	5.1	7.4	6.6	100	100	100
2012																					
Count	27	58	85	383	745	1128	16	49	65	335	483	818	63	30	93	58	134	192	882	1499	2381
Per cent	3.1	3.9	3.6	43.4	49.7	47.4	1.8	3.3	2.7	38.0	32.2	34.4	7.1	2.0	3.9	6.6	8.9	8.1	100	100	100

status, region/type of medical school and mainstream career choice (see the Methods section) as predictors (table 4).

Cohort year, gender, ethnic group, intercalated degree, medical school region and first choice of career were significant predictors of intention to apply for academic training, both separately and when all factors were included in the model. In summary, doctors from the 2005 cohort, male doctors, Asian doctors and doctors with intercalated degrees were more likely to opt for academic training than their counterparts. Respondents from Oxbridge were more likely to want to apply for academic training (20.8%) than the overall average (9.4%). Respondents whose first choice of career was surgery were more likely than average to want to apply for academic training, and intending GPs were less likely.

There were some comparisons within subgroups that are of interest. The intercalated degree 'effect' differed between the cohorts: the percentage of doctors without an intercalated degree who wanted to apply for an academic post decreased from 11.3% (2005 cohort) to 4.8% (2009 cohort) and 5.3% (2012 cohort) ($\chi^2_2=60.1$, $p<0.001$), while the percentage of doctors with an intercalated degree who wanted to apply for an academic post remained similar between the cohorts ($\chi^2_2=5.4$, $p=0.07$).

Variation by medical school region differed between the cohorts: among graduates from Scottish schools the percentage of doctors intending to apply for an academic post decreased from 15.4% (2005 cohort) to 5.8% (2009 cohort) and 7.0% (2012 cohort) and it declined from 11.0% (2005 cohort) to 6.7% (2009 cohort) in English old schools (both $p<0.001$). By contrast, the percentage of Oxbridge graduates intending to apply for an academic training post was higher in the 2012 cohort than in the 2005 cohort (it increased from 13.2% to 28.6%, $p<0.01$).

Long-term career intentions regarding academic work: multivariate modelling

We examined how long-term intention to work in posts with no research, clinical posts with some research and clinical academic posts (with 'no research' used as the reference category) varied by six factors: year of graduation, gender, ethnic group, intercalated degree status, medical school region and first choice of career. Each factor, considered separately, showed significant variation in the percentage opting for academic careers ($p<0.001$ using χ^2 tests, table 5).

We entered the factors together into a model using multinomial logistic regression to analyse their effects in combination (table 5). All six factors remained predictors of the intention to work long term in clinical academia, either in predicting the intention to work as a clinical academic or the intention to work in a clinical post with a research component, or both. For details of results, see table 5.

The multivariate analysis confirmed that men, doctors with intercalated degrees, Oxbridge graduates and intending surgeons were more likely to want a long-term career as a clinical academic than, respectively, women, doctors without intercalated degrees, non-Oxbridge graduates and intending hospital doctors in non-surgical posts ($p<0.001$ in each case). The significance of Asian ethnicity was less pronounced ($p=0.05$) in the multivariate model.

This pattern was similar for clinical posts with some research, except that there was no significant difference between men and women doctors, and the contrast between Asian and White ethnicity was more pronounced.

Table 3 Number of doctors by long-term career intention regarding academic work at 1 year and 5 years (2005 cohort)

	Intentions in 2010			
Intentions in 2006	**Clinical academic posts**	**Clinical posts with some research**	**Clinical posts without research**	**Total**
All				
Clinical academic posts	**23**	30	23	76
Clinical posts with some research	45	**316**	374	735
Clinical posts without research	12	124	**629**	765
Total	80	470	1026	1576
Men				
Clinical academic posts	**19**	17	7	43
Clinical posts with some research	24	**139**	134	297
Clinical posts without research	5	54	**177**	236
Total	48	210	318	576
Women				
Clinical academic posts	**4**	13	16	33
Clinical posts with some research	21	**177**	240	438
Clinical posts without research	7	70	**452**	529
Total	32	260	708	1000

'Clinical posts with some research' comprises 'clinical posts with some teaching and research' and 'clinical posts with some research time', and 'clinical posts without research' comprises 'clinical posts with some teaching responsibility' and 'clinical service posts without teaching or research'; this table does not include those who were 'undecided'.
Quasi-symmetry test results: all: χ^2_4=279.8, p<0.001; men: χ^2_4=132.1, p<0.001; women: χ^2_4=122.1, p<0.001.
Bold denotes doctors whose intentions did not change between 2006 and 2010.

DISCUSSION

A smaller percentage of women than men intend to undertake an academic training post and a smaller percentage of women than men want an eventual career in clinical academia. This matches with the actual shortfall of women in clinical academic posts, particularly at senior level. Our study shows that differences between women and men, in these respects, are established very early in the careers of doctors. This said, it is also clear that early intentions about clinical academic careers are not highly predictive of what doctors eventually do. For example, while very similar numbers of 2005 graduates surveyed in year 1 and year 5 intended to follow a clinical academic career, many who comprised the group of aspiring clinical academics in years 1 and 5 were different individuals. It is important that flexibility is maintained in possibilities for switching into (and out of) clinical academic career pathways.

Table 4 Intention to apply for academic training: UK medical graduates of 2005, 2009 and 2012 1 year after graduation by cohort year, gender, ethnic group, intercalated degree status, medical school region and first career choice

		Intending to apply for academic training		Univariate analysis			Multivariate analysis	
Predictor	**Group**	**Per cent**	**n/N**	**df**	**χ^2**	**p Value**	**Wald**	**p Value**
Cohort year	2005	11.4	309/2705	6	221.7	<0.001	17.4	<0.001
	2009	7.3	174/2385					
	2012	9.1	190/2080					
Gender	Men	13.2	337/2555	3	150.8	<0.001	36.2	<0.001
	Women	7.3	336/4615					
Ethnic group	White	8.2	437/5323	6	152.9	<0.001	20.5	<0.001
	Asian	13.0	173/1331					
	Other	12.2	63/516					
Intercalated degree	Yes	11.9	242/2032	3	209.9	<0.001	26.6	<0.001
	No	7.9	242/3058					
Medical school region	England, old schools	8.4	261/3099	18	268.1	<0.001	50.6	<0.001
	England, new schools	5.5	27/489					
	London	9.0	149/1648					
	Oxbridge	20.8	86/414					
	Scotland	10.4	101/973					
	Northern Ireland	10.1	21/207					
	Wales	8.2	28/340					
First choice of career	Hospital medical specialties	10.9	168/1545	9	563.3	<0.001	18.6	<0.001
	Other hospital	8.5	211/2478					
	General practice	6.3	120/1915					
	Surgery	14.1	174/1232					

'Univariate' denotes single factor χ^2 test for each predictor. 'Multivariate' denotes binomial logistic regression result for each predictor with all other predictors in the model. We excluded cases where one or more predictors were missing, which reduced the sample size from 7623 (see table 1) to 7170.

Table 5 Long-term career intention regarding academic work: UK medical graduates of 2005, 2009 and 2012 1 year after graduation by cohort year, gender, ethnic group, intercalated degree status, medical school region and first career choice

		Long-term career intention								Univariate analysis			Multivariate analysis			
		Clinical academic		Clinical posts with some research		Clinical posts without research		Total					Clinical academic vs no research		Some research vs no research	
Predictor	Group	N	Per cent	N	Per cent	N	Per cent	N	Per cent	df	χ^2	p Value	Wald	p Value	Wald	p Value
Cohort	2005	117	4.5	1220	46.8	1271	48.7	2608	100	4	52.4	<0.001	2.6	0.11	19.5	<0.001
	2009	52	2.4	876	39.7	1277	57.9	2205	100				7.3	<0.01	0.7	0.41
	2012*	76	3.8	806	40.8	1093	55.3	1975					N/A	N/A	N/A	N/A
	Total	245	3.6	2902	42.8	3641	53.6	6788	100							
Gender	Male	151	6.1	1152	46.6	1167	47.2	2470	100	2	122.0	<0.001	43.4	<0.001	2.9	0.09
	Female*	94	2.2	1750	40.5	2474	57.3	4318	100				N/A	N/A	N/A	N/A
	Total	245	3.6	2902	42.8	3641	53.6	6788	100							
Ethnic group	White*	165	3.3	2001	39.8	2865	56.9	5031	100	4	87.2	<0.001	N/A	N/A	N/A	N/A
	Asian	62	4.8	654	51.1	563	44.0	1279	100				3.7	0.05	18.2	<0.001
	Other	18	3.8	247	51.7	213	44.6	478	100				0.1	0.70	7.1	<0.01
	Total	245	3.6	2902	42.8	3641	53.6	6788	100							
Intercalated degree	Yes	157	5.6	1446	51.5	1204	42.9	2807	100	2	267.5	<0.001	37.2	<0.001	57.3	<0.001
	No*	88	2.2	1456	36.6	2437	61.2	3981	100				N/A	N/A	N/A	N/A
	Total	245	3.6	2902	42.8	3641	53.6	6788	100							
Medical school region	England, old schools*	88	3.0	1125	38.5	1711	58.5	2924	100	12	207.7	<0.001	N/A	N/A	N/A	N/A
	England, new schools	6	1.3	175	38.7	271	60.0	452	100				1.1	0.30	5.2	<0.05
	London	65	4.2	782	50.2	711	45.6	1558	100				0.4	0.55	11.7	<0.01
	Oxbridge	33	8.1	241	59.5	131	32.3	405	100				20.3	<0.001	37.4	<0.001
	Scotland	37	4.0	397	42.7	496	53.3	930	100				2.4	0.12	4.0	<0.05
	Northern Ireland	4	2.0	56	27.7	142	70.3	202	100				0.8	0.37	5.6	<0.05
	Wales	12	3.8	126	39.7	179	56.5	317	100				2.1	0.14	1.9	0.16
	Total	245	3.6	2902	42.8	3641	53.6	6788	100							
First career choice	Hospital Medical Specs*	73	4.8	745	49.2	695	45.9	1513	1000	6	638.1	<0.001	N/A	N/A	N/A	N/A
	Other hospital	89	3.8	1105	47.1	1154	49.1	2348	100				0.5	0.47	0.1	0.72
	General practice	15	0.9	375	21.4	1362	77.7	1752	100				45.2	<0.001	241.6	<0.001
	Surgery	68	5.8	677	57.6	430	36.6	1175	100				1.5	0.22	16.9	<0.001
	Total	245	3.6	2902	42.8	3641	53.6	6788	100							

*indicates reference category. We discounted 687 respondents who said that they were 'undecided' about their long-term career intention: this left 7230 respondents. We also excluded cases where one or more predictors were missing, which reduced the sample size from 7230 to 6788. 'Univariate' denotes single factor χ^2 test for each predictor. 'Multivariate' denotes multinomial logistic regression result for each predictor with all other predictors in the model. Multivariate model fitting (likelihood ratio tests): year of graduation 46.7 on 4 df=11.7 per df; gender 44.7 on 2 df=22.4 per df; intercalated degree status 79.4 on 2 df=39.7 per df; career choice 497.4 on 6 df=82.9 per df; ethnicity 23.2 on 4 df=5.8 per df; medical school region 68.3 on 12 df=5.7 per df.

Doctors of Asian ethnicity were more likely than others to intend to have a career in clinical academia. Doctors who had undertaken an intercalated degree, as well as the medical degree, were more likely than others to want to pursue an academic career. There were also noteworthy differences between medical schools in the likelihood that their graduates wanted a clinical academic career.

F1 doctors in 2013 had lower levels of intention to apply for academic F2 training placements than their predecessors in 2006. Intentions among F1s to undertake academic specialty training were lower in 2010 and 2013 than in 2006, and larger percentages were definite about not wishing to undertake academic training, with fewer being undecided. Looking further ahead, intentions to follow an academic career, as the preference for eventual career, were only slightly lower among the F1s of 2013 than among the F1s of 2006. However, the overall figures masked a fall among women and a rise among men. Most doctors wanted a job with teaching opportunities.

Recently in the UK, initiatives such as the Academic Clinical Fellowship (ACF) programme (introduced in England in 2007), UK academic foundation programmes and clinician scientist fellowships have established new pathways for doctors into clinical academia. Three-quarters of academic foundation trainees wanted to work in academia after their foundation programme,[18] and ACF trainees report that they are highly motivated by variety in a job, intellectual environment and the challenges of an academic career.[19] There was an increase in clinical academic post-holders of 8% between 2006 and 2012 in the UK; the number of UK clinical academics remained steady in 2010–2012, but the number of clinical academics was still 10.8% lower in 2012 than it was in 2000.[12]

While there was a rise in the number of clinical academics in the UK between 2006 and 2012,[12] our findings indicate that recent graduates may be less likely to contribute substantially to a further rise. A decline in interest in clinical academic careers in recent years has been documented elsewhere.[1 20]

The number of women doctors on the UK Medical Register grew by 4.3% between 2011 and 2012 compared with 1.5% for men doctors.[21] This feminisation of the medical workforce has contributed to a 54% increase in the number of female lecturers between 2004 and 2012, but there is still a gender disparity especially in the more senior roles.[12] The feminisation of the workforce may increase the proportion of women clinical academics, but it may have less effect on the proportion of women

changing their mind later in their career. In one study of academics who had left academic medicine, reasons for this included a lack of role models, mentors and funding opportunities, poor work-life balance and a biased work environment.[22]

The feed-through of increasing numbers of women academics from junior to senior roles will increase the number of visible senior role models: this is an important incentive for young women.[10] Women working as clinical academics have reported feeling as if they 'don't belong'.[23] The extent to which academic training posts and long-term research careers can be made more attractive to women needs to be investigated. Others have called for flexibility and work-life integration to be seen as beneficial to a career rather than detrimental.[5]

The strengths of this study are that the surveys are national, longitudinal and confidential. Because the study is prospective, recall bias about career intentions is not possible. As with all surveys, non-responder bias is possible.

Further study should address the reasons why fewer women than men choose academic training and careers, even when early in their careers. It is important, too, to understand more about why more women than men change their minds about an early choice for academic training and jobs. An early expressed intention to follow an academic career is often not followed through. This may suggest that flexibility in moving into and out of academic training may be helpful to support doctors' changing intentions in their early postgraduate years. Our findings also suggest that an interest in clinical academic careers, as a possible eventual career destination, may be waning among junior doctors.

Main messages

- As early as 1 year after graduation, a significantly smaller percentage of women than men intended to pursue a clinical academic career.
- Factors that may deter women from an academic career warrant study.
- Asian doctors were more likely than others to intend to have a career in clinical academia, as were doctors who had an intercalated degree.
- Graduates from some medical schools, notably Oxford and Cambridge but also others, were more likely to be aspiring academics.

Current research questions

- Why do fewer women than men choose clinical academic training?
- Why do more women than men reject an early choice for a clinical academic career?
- What can be done to enable women doctors to pursue clinical academic careers successfully?

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