

Doctors currently in jobs with academic content and their future intentions to pursue clinical academic careers: questionnaire surveys

Trevor W Lambert, Fay Smith and Michael J Goldacre

UK Medical Careers Research Group, Unit of Health-Care Epidemiology, Nuffield Department of Population Health, University of Oxford, Oxford OX3 7LF, UK

Corresponding author: Trevor W Lambert. Email: trevor.lambert@dph.ox.ac.uk

Summary

Objectives: Our aim was to report on doctors' descriptions of their current post at about 12 years after qualification, in respect of academic content, and to compare this with their long-term intentions. By academic content, we mean posts that are designated as clinical academic posts or clinical service posts that include research and/or teaching commitments.

Design: Questionnaire survey.

Participants: All UK medical graduates of 1996 contacted in 2007, graduates of 1999 in 2012, and graduates of 2000 in 2012.

Setting: UK.

Main outcome measures: Responses about current posts and future intentions.

Method: Postal and email questionnaires.

Results: The response rate was 61.9% (6713/10844). Twenty eight per cent were working in posts with academic content (3.3% as clinical academics, 25% in clinical posts with some academic content). Seventeen per cent of women were working in clinical posts with some teaching and research, compared with 29% of men. A higher percentage of men than women intended to be clinical academics as their eventual career choice (3.9% overall, 5.4% of men, 2.7% of women).

More doctors wished to move to a job with an academic component than away from one (N = 824 compared with 236). This was true for both men (433 compared with 118) and women (391 compared with 118).

Conclusions: Women are under-represented both in holding posts with academic content and in aspirations to do so. It is noteworthy that many more doctors hoped to move into an academic role than to move out of one. Policy should facilitate this wish in order to address current short-falls in clinical academic medicine.

Keywords

clinical academic, career choice, workforce, medical education, medical faculty

Introduction

The Savill¹ and Walport reports² made recommendations to improve recruitment of clinical academics in the UK. Since their publication, initiatives and programmes have been put in place, including the creation of Clinician Scientist positions and of Academic Clinical Fellowships, the establishment of the National Institute for Health Research in 2006, and of the Scottish Clinical Research Excellence Development Scheme in 2009.³ The increase in funding from 2001 onwards was accompanied by an 8% increase in the number of UK clinical academics between 2006 and 2010; however, the total of 3133 whole time equivalent staff in clinical academia in 2012 remained 12% below the total of 3549 in the year 2000.⁴ Challenges to recruitment include changes to the NHS, the European Working Time Directive, and higher student fees.⁵ Some doctors are attracted to clinical academic medicine for reasons which include the challenge of research, variety, and intellectual stimulation.^{6,7} However, there are also perceived disincentives reported by researchers: these include perceptions about low pay, poor job security, lack of autonomy, and reduced training opportunities.^{8,9}

The UK Medical Careers Research Group has studied the career preferences of junior doctors, and their subsequent career pathways, for many years in multi-purpose career-related surveys. In this paper, we report on some of the findings, related to academic work in medicine, from the surveys of the UK graduates of 1996 in 2007, graduates of 1999 in 2012, and graduates of 2000 in 2012.

The aim of this study was to determine whether doctors' current posts, in terms of academic content, matched their long-term intentions regarding academic medicine.

Methods

The Medical Careers Research Group surveyed the UK medical graduates of 1996, 1999, and 2000. We refer to the graduates of a single graduation year as 'a cohort': for example, the 1996 cohort. Postal questionnaires were sent in 2007 to the 1996 cohort (11 years after graduation), and in 2012 to the 1999 and 2000 cohorts (13 and 12 years after graduation, respectively). Up to four reminders were sent to non-respondents. Further details of the methodology are available elsewhere.^{10,11}

We asked all cohorts 'How would you best describe your current post?' (with the options being *Clinical academic with honorary NHS sessions*, *Clinical service with some research time*, *Clinical service with some teaching and research*, *Clinical service with some teaching responsibility*, *Clinical service without teaching or research*, and *Other*). They were also asked 'In your long-term career do you intend to work mainly in', with similar reply options, namely *Clinical academic posts with honorary NHS sessions*, *Clinical service posts with some research time*, *Clinical service posts with some teaching and research*, *Clinical service posts with some teaching responsibility*, *Clinical service posts without teaching or research*, *Undecided*, and *Other*. The formulation 'clinical academic with honorary NHS sessions' is used in the UK NHS to denote a doctor working in a clinical academic role who also has a clinical contract with the NHS (as most clinical academics do).

Contact details for doctors were supplied to us by the General Medical Council under a data sharing agreement. The original cohort sizes of 3868, 4213, and 4428 for the 1996, 1999, and 2000 cohorts, respectively, were reduced by deceased doctors, doctors who asked to be excluded, and doctors for whom we did not have a current address or email. For these reasons we lost 200, 723, and 842 doctors from the respective cohorts. The larger numbers omitted from the latter two cohorts reflect a change of policy whereby we excluded doctors who had not replied to any of our previous surveys of them.

The data were initially analysed by univariate crosstabulation. To test statistical significance we used χ^2 statistics (reporting Yates's continuity correction where there was only one degree of freedom). We used binary logistic regression to analyse the effect of factors in combination. Regression analyses only used variables which were significant as single variables using χ^2 statistics. Respondents were grouped according to cohort (1996, 1999, 2000); gender; ethnic group (grouped by us, using the doctors' self-reported ethnicity, as Asian, White, and Other); possession, or not, of an intercalated degree (i.e. a degree, usually in a science subject, undertaken contemporaneously

with the medical degree); region and type of clinical medical school (grouped as London, Oxford and Cambridge (the latter two often referred to in the UK as Oxbridge), Other English schools, Scotland, Northern Ireland and Wales); and first choice of current specialty (hospital medical specialties, surgical specialties, general practice, and other hospital specialties).

Results

Response rates

The overall response rate was 61.9% (6713/10,844). For the surveys of the 1996, 1999, and 2000 cohorts the respective response rates were 60.7%, 64.6%, and 60.5% (respectively, 2228/3668, 2255/3490, and 2230/3686).

Current post

Of 6178 respondents who described their current post, 3.3% were working in clinical academic posts, 2.9% in clinical posts with some research but without teaching responsibilities, and 22.1% in clinical posts with some research and teaching; hence in total 28.3% were working in a post with research content (Table 1), and the remainder were divided between clinical posts with and without teaching. A much lower percentage of women than of men were working in clinical posts with some teaching and research (16.6% compared with 28.4%), and a higher percentage of women than men were in clinical posts without teaching or research (32.7% of women, 18.8% of men; Table 1).

In the UK, general practice (family medicine) affords fewer opportunities than hospital medicine to work in an academic post, and 38.1% of women in our sample were working as GPs compared with 24.8% of men. Excluding doctors in general practice, the percentage of women working in clinical posts with some teaching and research was still much lower than that of men (24.7% compared with 35.2%), and the percentage of women working in clinical posts without teaching or research was higher (22.9% of women, 14.4% of men).

Current post and long-term career intention

Asked about the types of post they would like to work in long term (Table 1), 4.6% were undecided. A total of 10.2% wished to work in clinical posts without teaching or research, compared with 26.2% currently in such posts. There was no difference in long-term intentions between the three cohorts.

Table 1. Percentages of doctors by current post and long term intentions – 1996, 1999, and 2000 cohorts.

Type of post	Men		Women		Total	
	Current post	Long-term intention	Current post	Long-term intention	Current post	Long-term intention
Clinical academic	4.1	5.4	2.6	2.7	3.3	3.9
Clinical with some research	3.8	2.7	2.2	2.1	2.9	2.4
Clinical with some teaching and research	28.4	38.8	16.6	24.5	22.1	31.1
Total with academic content*	36.3	46.9	21.4	29.3	28.3	37.4
Clinical with some teaching	44.9	42.0	45.9	52.7	45.4	47.7
Clinical without teaching or research	18.8	7.5	32.7	12.6	26.2	10.2
Undecided	N/A	3.7	N/A	5.4	N/A	4.6
Total (all six types of post)	100 (N = 2883)	100 (N = 2935)	100 (N = 3299)	100 (N = 3426)	100 (N = 6178)	100 (N = 6361)

*Total of the three types of post immediately above.

Note: A total of 535 respondents did not describe their current post and have been excluded from the table; 352 respondents did not describe their long-term post and have been excluded from the table.

Excluding the undecided, comparing current and future intentions across the five groups, we found differences in intentions for the total, for men and for women ($\chi^2_4 = 543.9, 201.7, 365.6$, respectively, all $p < 0.001$). Many more doctors wished to work long term in clinical posts with some teaching and research than were currently doing so (31.1% compared to 22.1%), and many fewer (26.2% compared to 10.2%) wished to work long term in clinical posts without teaching or research. More wished to work in clinical academic posts than were currently doing so (3.9% compared to 3.3%). Differences between current posts and future intentions followed broadly the same pattern for men and women.

We reduced the five response categories to three – clinical academic posts, other clinical posts with some research, and clinical posts without research – and cross-tabulated current posts with long-term career intentions (Table 2).

Only 65% (121/187) of doctors currently in clinical academic posts wanted a long-term clinical academic post; 70% (77/110) of men and 57% (44/77) of women ($\chi^2_1 = 2.7, p = 0.10$). Of those in clinical posts with some research, 15% (228/1496) wished to move to posts without research (men 13% (114/904), women 19% (114/592); $\chi^2_1 = 11.7, p < 0.001$). Sixty-two doctors in posts with some research indicated an intention to become clinical academics. Of those in clinical posts without research, 20% (824/4192) were interested in working in research, either as an academic (38 doctors) or in a clinical post with some

research (786). Among men 25% (433/1748) wished to work in research who were not currently doing so, for women the figure was 16% (391/2444); $\chi^2_1 = 49.7, p < 0.001$. Taking men and women together, 100 doctors intended to become clinical academics whilst 66 existing clinical academics planned to move away from clinical academia.

Academic content of current post – multivariate modelling (Table 3)

We created a binary variable ‘level of academic content in current post’ which allowed a comparison between those doctors whose current posts involved ‘some academic content’ and those whose current posts involved no academic content (Table 1). A binary logistic regression model was fitted with this variable as the dependent outcome and cohort group, gender, ethnic group, intercalated degree status, region/type of medical school, and mainstream career choice as predictors (Table 3).

Male doctors (35.4%) and doctors with intercalated degrees (34.2%) were more likely to be in a post with academic content than women (20.7%) and doctors without intercalated degrees (23.2%). Respondents working in surgical posts (53.5%) and the hospital medical specialties (43.6%) were more likely than average to be in a post with academic content and GPs (6.8%) were less likely (all $p < 0.001$).

Table 2. Numbers of doctors by current post and long-term intentions – 1996, 1999, and 2000 cohorts.

Current post	Long-term career intentions			Total
	Clinical academic posts	Clinical posts with some research	Clinical posts without research	
All				
Clinical academic posts	121	58	8	187
Clinical posts with some research	62	1206	228	1496
Clinical posts without research	38	786	3368	4192
Total	221	2050	3604	5875
Men				
Clinical academic posts	77	29	4	110
Clinical posts with some research	42	748	114	904
Clinical posts without research	26	407	1315	1748
Total	145	1184	1433	2762
Women				
Clinical academic posts	44	29	4	77
Clinical posts with some research	20	458	114	592
Clinical posts without research	12	379	2053	2444
Total	76	866	2171	3113

Note: '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'. Bold font, on the diagonals, highlights the number of doctors whose current type of post and future intentions were the same.

Clinical academic status of current post – multivariate modelling (Table 4)

We compared clinical academics with all other doctors using binary logistic regression using the same predictors as before (Table 4).

Doctors with intercalated degrees (5.6%) were more likely to be clinical academics than those without (1.6%). Respondents working in the hospital medical specialties (9.4%) were more likely than average to be working as a clinical academic and GPs (0.3%) were less likely (all $p < 0.001$).

Current post and long-term career intention – multivariate modelling (Table 5)

We fitted one further model to investigate doctors who were either working in a post with academic content or had aspirations to do so, compared to doctors who were not working in such a post nor aspired to be in one (Table 5). We applied a binary logistic regression model using the same predictors as before.

Male doctors (51.7%), and doctors with intercalated degrees (51.2%), were more likely to be in a post with academic content or aspire to academic work than were women (32.8%) and doctors without intercalated degrees (35.3%). White doctors were less likely to be in a post with academic content or aspire to academic work (38.9%), compared to Asian doctors (52.5%) or other non-white doctors (49.5%). Respondents working in the surgical (71.6%) and hospital medical specialties (63.4%) were more likely than average to be in a post with academic content or aspire to academic work, and GPs (14.3%) were less likely (all $p < 0.001$).

Discussion

Main findings

In these cohorts, a much larger percentage of men than women were working in posts with academic content. The difference was largely made up of posts which combined clinical work with teaching

Table 3. Predictors of academic content in current posts: UK medical graduates of 1996, 1999, and 2000 by cohort year, gender, ethnic group, intercalated degree status, medical school region, and current specialty.

Predictor	Group	Doctors in posts with academic content		Univariate analysis			Multivariate analysis	
		%	n/N	df	χ^2	p	Wald	p
Cohort	1996	28.8	431/1495	2	7.0	0.030	10.3	0.006
	1999	26.4	477/1805					
	2000	27.5	500/1817					
Gender	Men	35.4	838/2364	1	164.7	<.001	32.3	<.001
	Women	20.7	570/2753					
Ethnic group	White	26.2	1060/4052	2	22.3	<.001	9.2	0.010
	Asian	34.3	293/855					
	Other	26.2	55/210					
Intercalated degree	Yes	34.2	690/2020	1	81.0	<.001	15.1	<.001
	No	23.2	718/3097					
Medical school region	London	29.0	412/1421	5	51.1	<.001	4.4	0.494
	Oxbridge	41.3	123/298					
	Other English schools	24.8	537/2166					
	Scotland	29.0	248/856					
	Northern Ireland	22.2	37/167					
	Wales	24.4	51/209					
Current specialty	Hospital Medical Specialties	43.6	371/851	3	829.6	<.001	518.6	<.001
	Other hospital	31.9	532/1666					
	General practice	6.8	130/1899					
	Surgical specialties	53.5	375/701					

Note: '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 6713 to 5117.

and research. Doctors with intercalated degrees and those working in the surgical or hospital medical specialties were also more likely than others to be working in posts with some academic content – though not necessarily as clinical academics – see below.

Long term, more men than women intended to pursue clinical academic careers. For women, clinical posts with teaching were much more popular long-term careers than clinical posts with research content. For men, careers with academic content were slightly more popular than those without. More men than women doctors wanted to move towards a career

with academic content than away from it, when comparing current posts and future intentions.

Oxbridge graduates and surgeons have the highest percentages of aspirations to do academic work. However, relatively few surgeons become clinical academics, compared to their colleagues in the hospital physician specialties. Most of the clinical academics in our survey were either working in the hospital physician specialties or other non-surgical hospital specialties; only 11% were working in surgical specialties and 3% in general practice. Similar staffing levels were reported nationally in 2013.³

Table 4. Predictors of doctors who eventually work in clinical academic posts: UK medical graduates of 1996, 1999, and 2000 by cohort year, gender, ethnic group, intercalated degree status, medical school region, and current specialty.

Predictor	Group	Doctors in clinical academic posts		Univariate analysis			Multivariate analysis	
		%	n/N	df	χ^2	p	Wald	p
Cohort	1996	3.3	50/1495	2	4.2	0.124	4.1	0.132
	1999	2.7	48/1805					
	2000	3.6	65/1817					
Gender	Men	4.1	97/2364	1	8.9	0.003	4.0	0.046
	Women	2.4	66/2753					
Ethnic group	White	3.0	121/4052	2	2.7	0.258	2.1	0.357
	Asian	3.7	32/855					
	Other	4.8	10/210					
Intercalated degree	Yes	5.6	113/2020	1	61.1	<.001	20.2	<.001
	No	1.6	50/3097					
Medical school region	London	3.2	46/1421	5	70.5	<.001	13.1	0.022
	Oxbridge	10.7	32/298					
	Other English schools	2.6	57/2166					
	Scotland	2.5	21/856					
	Northern Ireland	1.8	3/167					
	Wales	1.9	4/209					
Current specialty	Hospital Medical Specialties	9.4	80/851	3	179.0	<.001	80.8	<.001
	Other hospital	3.6	60/1666					
	General practice	0.3	5/1899					
	Surgical specialties	2.6	18/701					

Note: '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 6713 to 5117.

We found some differences by ethnicity. Non-white doctors were keener than white doctors on long-term posts with academic content, though differences by ethnicity in the percentages in academic posts, or posts with academic content, were not particularly marked.

Wider context

Since the first survey was undertaken, in 2007, a number of initiatives have begun to address some of

the disincentives often associated with a clinical academic career.¹² For example, the UK Centre for Medical Research and Innovation (now known as The Francis Crick Institute) brings together researchers from different institutions, and it aims to 'educate and inspire scientists now and in the future'.¹³

Women are underrepresented in academic medicine.⁴ We found that relatively few women aspire to careers in academic medicine; initiatives such as the UK Athena SWAN Awards programme and the changing gender profile of the medical workforce

Table 5. Predictors of doctors working in an academic post OR with academic aspirations: UK medical graduates of 1996, 1999, and 2000 by cohort year, gender, ethnic group, intercalated degree status, medical school region, and current specialty.

Predictor	Group	Doctors in an academic post OR with academic aspirations*		Univariate analysis			Multivariate analysis	
		%	n/N	df	χ^2	p	Wald	p
Cohort	1996	43.2	611/1415	2	9.6	0.008	11.4	0.003
	1999	40.7	701/1722					
	2000	41.2	716/1738					
Gender	Men	51.7	1172/2265	1	200.5	<.001	48.4	<.001
	Women	32.8	856/2610					
Ethnic group	White	38.9	1505/3867	2	59.9	<.001	30.6	<.001
	Asian	52.5	426/812					
	Other	49.5	97/196					
Intercalated degree	Yes	51.2	989/1930	1	135.9	<.001	29	<.001
	No	35.3	1039/2945					
Medical school region	London	44.2	595/1346	5	90.9	<.001	11.4	0.044
	Oxbridge	62.1	175/282					
	Other English schools	38.1	788/2069					
	Scotland	42.5	348/818					
	Northern Ireland	31.9	51/160					
	Wales	35.5	71/200					
Current specialty	Hospital Medical Specialties	63.4	512/807	3	1082.8	<.001	98.7	<.001
	Other hospital	48.3	768/1591					
	General practice	14.3	257/1791					
	Surgical specialties	71.6	491/686					

Note: *The other category includes doctors who are neither in an academic post NOR aspire to one.

'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 6713 to 4875.

may change this, but women face various barriers when choosing an academic career.^{4,14} As early as one year after graduation, more men than women aspire to pursue academic training and careers.¹⁵

When considering how to make clinical academic positions more attractive, sustained funding is important: there is evidence that the Academic Clinical Fellowship Programme⁷ and Clinical Research Training Fellowships¹⁶ are succeeding in

increasing the number of clinical academics and building capacity.

Strengths and limitations

We have surveyed three large, nationally representative, cohorts of senior doctors who span many different specialties. Our response rates are good and consistent across the surveys and we believe that

our confidentiality inspires confidence on the part of participants. As with all survey work the possibility of non-responder bias exists. We do not know whether doctors' long-term aspirations will be fulfilled.

Conclusions

Women are under-represented both in holding posts with academic content and in aspirations to do so. There is potential for more doctors, in these cohorts at least, to move into posts with academic content. The numbers aspiring to do academic work, who currently do not, substantially exceeds the number currently doing academic work who do not wish to continue doing so. This is true for both men and women. Policy should address how to tap into this unused pool of potential academics in medicine.

Declarations

Competing interests: All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and all authors want to declare: (1) financial support for the submitted work from the policy research programme, Department of Health. All authors also declare: (2) no financial relationships with commercial entities that might have an interest in the submitted work; (3) no spouses, partners, or children with relationships with commercial entities that might have an interest in the submitted work; (4) no non-financial interests that may be relevant to the submitted work.

Funding: This is an independent report commissioned and funded by the Policy Research Programme in the Department of Health (project number 016/0118). Michael Goldacre is part-funded by Public Health England. The views expressed are not necessarily those of the funding bodies.

Ethical approval: This study was approved by the National Research Ethics Service, following referral to the Brighton and Mid-Sussex Research Ethics Committee in its role as a multi-centre research ethics committee (ref 04/Q1907/48).

Guarantor: All authors are guarantors.

Contributorship: TWL and MJG designed and conducted the survey. FS performed the analysis and wrote the first draft of the paper. All authors contributed to further drafts and all approved the final version.

Acknowledgements: We would like to thank Emma Ayres for administering the surveys, Janet Justice and Alison Stockford for data entry. We are very grateful to all the doctors who participated in the surveys.

Provenance: Not commissioned; peer-reviewed by Shelain Patel

References

1. The Academy of Medical Sciences. *The Tenured Track Clinician Scientist: a new career pathway to promote recruitment into academic medicine*. London: The Academy of Medical Sciences, 2000.
2. Walport M. Medically and dentally qualified academic staff: recommendations for training the researchers and educators of the future. Report of the Academic Careers Sub-committee of Modernising Medical Careers and the UK Clinical Research Collaboration. London: UK CRC, 2005.
3. Medical Schools Council. *A survey of staffing levels of medical clinical academics in UK medical schools as at 31st July 2012*. London: Medical Schools Council, 2013.
4. Medical Schools Council. *A survey of staffing levels of medical clinical academics in UK medical schools as at 31st July 2013*. London: Medical Schools Council, 2014.
5. Fitzpatrick S. *Challenges and opportunities for recruitment to clinical academic medicine and dentistry*. London: Medical Schools Council, 2011.
6. Goldacre M, Stear S, Richards R and Sidebottom E. Junior doctors' views about careers in academic medicine. *Med Educ* 1999; 33: 318–326.
7. Goldacre MJ, Lambert TW, Goldacre R and Hoang UY. Career plans and views of trainees in the Academic Clinical Fellowship Programme in England. *Med Teach* 2011; 33: e637–e643.
8. Straus SE, Straus C and Tzanetos K. Career choice in academic medicine: systematic review. *J Gen Intern Med* 2006; 21: 1222–1229.
9. Lyons OTA, Smith C, Winston JS, Geranmayeh F, Behjati S, Kingston O, et al. Impact of UK academic foundation programmes on aspirations to pursue a career in academia. *Med Educ* 2010; 44: 996–1005.
10. Goldacre MJ, Davidson JM and Lambert TW. Career choices at the end of the pre-registration year of doctors who qualified in the United Kingdom in 1996. *Med Educ* 1999; 33: 882–889.
11. Lambert TW, Goldacre MJ, Edwards C and Parkhouse J. Career preferences of doctors who qualified in the United Kingdom in 1993 compared with those of doctors qualifying in 1974, 1977, 1980, and 1983. *Br Med J* 1996; 313: 19–24.
12. Medical Schools Council. *A survey of staffing levels of medical clinical academics in UK medical schools as at 31st July 2011*. London: Medical Schools Council, 2012.
13. The Francis Crick Institute. Strategy, <http://www.crick.ac.uk/scientific-vision/strategy/> (accessed 18 March 2013).
14. Medical Schools Council and Dental Schools Council. Women in STEM careers. Written evidence submitted by the Medical Schools Council and Dental Schools Council to the House of Commons Science and Technology Committee, 2013.
15. Smith F, Lambert TW and Goldacre MJ. Demographic characteristics of doctors who intend to follow clinical academic careers: UK national questionnaire surveys. *Postgrad Med J* 2014; 90: 557–564.
16. Stewart PM, Bryan S, Dukes P, Van Oudheusden HL, Walker R and Maxwell PH. What happens to clinical training fellows? A retrospective study of the 20 years outcome of a Medical Research Council UK cohort. *BMJ Open* 2012; 2: e001792.