

Making clinical academic careers more attractive: views from questionnaire surveys of senior UK doctors

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Summary

Objectives: To report on doctors' reasons, as expressed to our research group, for choosing academic careers and on factors that would make a career in clinical academic medicine more attractive to them.

Design: Postal, email and web questionnaires.

Setting: UK.

Participants: A total of 6936 UK-trained doctors who graduated in 1996, 1999 and 2000.

Main outcome measures: Open-ended comments about a career in clinical academic medicine.

Results: Of doctors who provided reasons for pursuing a long-term career in clinical academic medicine, the main reasons were enjoyment of academic work and personal satisfaction, whether expressed directly in those terms, or in terms of intellectual stimulation, enjoyment of research, teaching and the advancement of medicine, and the job being more varied than and preferable to clinical work alone. Doctors' suggestions for making clinical academic medicine more attractive included improved pay and job security, better funding of research, greater availability of academic posts, more dedicated time for research (and less service work) and more support and mentoring. Women were more likely than men to prioritise flexible working hours and part-time posts.

Conclusions: Medical schools could provide more information, as part of student teaching, about the opportunities for and realities of a career in clinical academic medicine. Women, in particular, commented that they lacked the role models and information which would encourage them to consider seriously an academic career. Employers could increase academic opportunities by allowing more time for teaching, research and study and should assess whether job plans make adequate allowance for academic work.

Keywords

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

intellectual stimulation'.² Perceived disincentives include difficulty in obtaining research funding, lower pay than clinical colleagues, lack of job security and reduced clinical training while in academic training.^{1–3} A systematic literature review of career choice in academic medicine found that reported incentives were completion of research in medical school, a desire to teach or do research and the presence of a role model; reported disincentives included low pay, lack of autonomy and lack of career flexibility.⁴ Women, more so than men, are reportedly held back by these disincentives and barriers, and their under-representation in academic medicine is said to impair research agendas, affect patients and waste public investment.⁵ Women comprise just 28% of UK clinical academics.⁶

The UK Medical Careers Research Group has studied career preferences of junior doctors, and their subsequent career pathways, for many years. In surveys of UK graduates of 1996 in 2007, and graduates of 1999 and 2000 in 2012, we included questions about attitudes to academic careers. Our aims here are to report on the doctors' views, expressed to us about clinical academic careers, and their views about what changes could be made to clinical academic medicine to make it a more attractive career option.

Methods

Postal and web questionnaires were sent in 2007 to the 1996 cohort and in 2012 to the 1999 and 2000 cohorts. Up to four reminders were sent to non-respondents. Contact details were supplied by the General Medical Council. We omitted deceased doctors, doctors who asked to be excluded and doctors who were uncontactable. Further methodological details are available elsewhere.^{7,8}

We asked the 1996 cohort two open-ended questions: 'If you have chosen to pursue a long-term career in clinical academic medicine, what are your main reasons for that choice?' and 'If you do not

Introduction

Positive reasons for doctors to become clinical academics include 'the challenge of research' and the 'intellectual environment'¹ and 'variety and

intend to work in clinical academic medicine, are there any changes which would have made it more attractive to you as a career option?' The 1999 and 2000 cohorts were asked to 'give us any comments you wish to make, on any aspect of your training or work'. We extracted comments which contained any of the following text strings: academi, research, teach, study, education, papers, post-doc, publish, phd, fund, publication, dean, fellowship, doctora, lecturer, lectureship, thesis, MBA, university.

This was a qualitative study. As such, it was not our primary intention to quantify the frequency with which particular views were held about clinical academic careers. Rather, we aimed to identify issues worthy of consideration, even if they were raised by small numbers of individuals.

We developed a coding scheme which reflected the main themes raised. Two researchers coded the themes independently and inter-coder differences were resolved through discussion. Quantitative data were analysed by univariate crosstabulation and χ^2 statistics.

Results

Response

The response rate was 67% (2452/3668) for the 1996 cohort survey in 2007, and 62% (4484/7176) for the 1999 and 2000 surveys in 2012.

Views on doing academic work (1999 and 2000 cohorts)

In all, 1327 respondents (699 from the 1999 cohort, 628 from the 2000 cohort) provided comments. The comments of 339 doctors contained a keyword relating to academic work. Examination of context narrowed the number of doctors making a relevant comment to 124 (9.3% of commenters). This included 30 doctors working as clinical academics or aspiring to do so.

Comments were categorised into one or more of 13 themes (Table 1). Dominant themes included: 'time for academic work/study leave', 'support/supervision/mentor/advice', 'work-life balance/women

Table 1. Frequency distribution of coded comments^a made by senior doctors about academic work ($N = 124^b$): 1999 and 2000 cohorts surveyed in 2012.

Theme	Male ($N = 59$)	Female ($N = 65$)	N	Percentage of commenters ($N = 124$)
Time for academic work/study leave	14	18	32	26
Support/supervision/mentor/advice	9	17	26	21
Work-life balance/women academics	6	18	24	19*
Enjoy academic work	14	7	21	17
Career structure/job security	12	8	20	16
Access to teaching/quality of teaching	11	9	20	16
Academic pressures/targets	9	9	18	15
Working abroad	8	6	14	11
Funding	6	6	12	10
Academic/clinical balance	5	5	10	8
Pay	3	4	7	6
Portfolio careers	3	4	7	6
Other	2	3	5	4

^aSome doctors gave more than one reason and we counted each reason.

^bNumber of doctors who commented upon academic issues, not the number of commenting doctors ($N = 1327$).

* $p < 0.05$; Significance tests comparing men and women.

academics', 'enjoyment of academic work', 'career structure and job security', 'access to teaching and quality of teaching' and 'academic pressures/targets'. More women than men commented on 'work-life balance/women academics'.

We also include abstracts of the original doctors' quotations followed by a unique code: the full quotations are in the Appendix. Suffix 'M' denotes a man and 'W' a woman.

Time for academic work/study leave

The most frequent comment was that there was insufficient time to concentrate on academic work. One aspiring clinical academic wrote of 'too little flexibility to allow people to develop...academic interests' (M1). Some contracts only allowed for one Supporting Professional Activity (SPA): 'I am an employed consultant with only 1 SPA. I am therefore not involved in teaching, audit, research' (F2). One surgeon complained that '1 session per week for combined Research/Admin/Teaching/Study did not allow for the degree of development I had hoped' (M3). Some found better working conditions abroad: 'I get time and funding...to...teach, do research and supervise trainee projects' (F4).

Support/supervision/mentor/advice

Supervisors and mentors were very important. One doctor commented: '[I] have benefited from great advice and support from key, senior colleagues' (M5). Another wrote: 'it would be great to have a mentor...who can advise me regarding my academic/clinical career' (F6). One doctor had 'lacked good advice/mentoring' (M7).

Work-life balance/women academics

Some described 'sacrifices' made in pursuit of an academic career: 'I love being a doctor but if I knew the personal and family sacrifices...I doubt I would have chosen this profession' (F8). Many doctors found it difficult to combine academic work with childcare, though some working situations were better than others: 'An organised rota with protected time as I had at [named hospital] enabled me to make a successful fellowship application. This is in contrast to [named hospital] where the rota was shambolic and consultants unsupportive' (F9).

Many women described 'a lack of mentorship for women in academic medicine' (F10). This was compounded by having a family: '...women are greatly underrepresented in the higher echelons of academia and now that I have my own sights on such positions

I wonder how difficult it will be to "break through"'. A pathologist found it 'difficult working very long hours in general medicine while pregnant. Research funding is very competitive and difficult to get if working part-time' (F11).

Enjoyment of academic work

Academic work was rewarding and enjoyable for many: 'I spent 3 years in research and did an international fellowship which I believe greatly helped me' (M12). Another said 'I enjoy my work very much and would only consider changing jobs if my funding dried up!' (M13).

Some enjoyed academic medicine, but not as a career: 'There have been two reasons that I have ended up taking a consultant job rather than looking to continue down an academic path. Firstly job security. Secondly the scarcity of consultant jobs' (M14).

Career structure/job security

Some described the clinical academic career path as difficult: '[I am] moving towards an academic career but the obstacles are huge compared with [the] NHS route' (M15).

Some clinical academics were 'fortunate' or 'lucky' to have gained a certain post: 'I am lucky that my path as a clinical academic has been (a) supported by a strong research/clinical institution and (b) fortunate with fellowship awards' (M16). Another found that 'trying to develop a post-PhD research career while undertaking clinical duties was very challenging' (M17).

Indecision, a decade post-graduation, remained evident for some: 'I remain undecided if I want a life-long academic career or would prefer to be a NHS clinician with an active interest in research' (M18).

Many doctors mentioned job insecurity. One academic clinical oncologist had 'educated myself out of employment in the place I would prefer to live' (F19).

Access to teaching/quality of teaching

Several doctors had 'poor access to protected teaching whilst working' (M20). Some felt that the quality of teaching was inadequate: 'few consultants have a good understanding of good teaching/training practice' (M21). Another expressed concern for junior doctors taught by 'senior registrars reaching senior positions having worked fewer hours' (F22). A radiologist feared having 'to use (SPA) time to meet (Continuing Professional Development) requirements and may have to give up other roles such as teaching' (F23).

Academic pressures/targets

Some resented pressure to write academic papers: 'We went in to this to be clinicians, not to be paper churners' (M24). Another said: 'I spent 3 years in postgraduate research which has been completely unhelpful to my career' (M25).

Working abroad

Several doctors commented about academic opportunities abroad: 'in the US, academic medicine is strongly encouraged' (M26). One said that compared with Canada 'opportunities for research funding in my speciality are very limited in the UK' (F27). A surgeon working in Australia said that 'with a healthy interesting job, with the opportunity to teach and direct research, I can offer my family some stability without having to commute around the country' (M28).

Funding

Some doctors lacked funding for study leave: 'study leave is capped at £600 a year' (F29). One doctor was unable 'to obtain funding for a PhD in medical education despite having done an academic training fellowship, research in education, [and] having a relevant master's degree' (M30).

Academic/clinical balance

Doctors in academic work face conflicting demands on their time and expertise in the areas of clinical service work, academic research and teaching. Few mentioned this need for balance as a problem or disincentive to an academic career, but for those who did, it was an important issue.

One doctor felt that the UK system did not promote balance: 'I feel the UK is very poor in its support for anything other than service delivery development, and pays only lip service to training or academic pursuit' (M31). Doctors working Less Than Full Time found it particularly hard to do research. One doctor, whose contract was for 50% research said that 'on paper, I am being given a great opportunity to progress in research and to work less than full time, but in reality, I am being given a heavy burden of clinical duties' (F32). Incorporating teaching into the mix of responsibilities was mentioned by some: 'It is now very difficult to find the time to do all the things I would like to such as teach and do research' (F33).

Pay

Several believed that senior academic opportunities were few in number, and that pay was sometimes

low given the amount of responsibility involved: 'there are very few post-doctoral fellowships that would allow consultant pay-scale and this has forced me to take on a full NHS post without an honorary university contract in order to still have some grounding for my academic pursuits' (M34). One doctor felt 'embarrassed [by] how little I earn at my level of training. A career in hospital/academic medicine is just not sustainable as paid so little' (F35). A few doctors drew comparisons between pay for academic work in the UK compared with abroad: 'PhD salaries and the balance between work and family life are much better in Denmark than in the UK' (M36).

Portfolio career

Some doctors had 'portfolio careers' which enabled them to do some academic work: 'the flexibility of this non-training grade has allowed an acceptable work/life balance & also the development of a "portfolio" career involving a large commitment to teaching & medicine writing' (M37). Another described doing 'various pieces of work that are all inter-related: academia and clinical, but also writing books, journalism, live performances' (M38).

Reasons for pursuing a clinical academic medicine career (1996 cohort)

In this earlier survey, undertaken in 2007, reasons were given by 160 respondents who had chosen to pursue an academic career.

Enjoyment and personal satisfaction were the dominant reasons given, whether expressed directly in those terms, or in terms of intellectual stimulation, enjoyment of research, teaching and the advancement of medicine, or simply as the job being more varied and preferable to pure clinical work.

Typical comments were that clinical academia is 'interesting and creative' (male, dermatology), and that doing academic work 'helps to maintain an interest and enthusiasm in your job' (female, ophthalmology). A male anaesthetist commented that academic work 'provides stimulation and maintains interest. Opportunity to learn new skills, improve understanding'. Another doctor preferred the 'challenging mind-broadening environment rather than purely service directed future' (male, clinical academic). A male microbiologist felt that 'academic medicine gives you the chance to ask and try to answer interesting clinical questions, not to be in just routine clinical service, with no intellectual stimulation and input'. A female adult psychiatrist wrote that whilst she did 'enjoy research and teaching...I find clinical psychiatry emotionally draining at times and

research/teaching is refreshing and re-energises me for my clinical work'. Further examples of reasons given are shown in Box 1.

Changes which would make clinical academic medicine more attractive (1996 cohort)

Doctors not intending to work in clinical academic medicine were asked to describe up to three changes which would have made it a more attractive career option for them (Table 2; Box 2): 991 doctors answered this question. Over a third of commenters said that they 'would not consider or had not considered' clinical academic medicine. Typical comments included: 'Did not consider, as not really aware of what [it] involved' (female, palliative care); 'Never had opportunity to try it' (male, orthopaedics/trauma); and 'No, I am a clinician' (male, anaesthetics).

The most frequently suggested improvement to make clinical academia more attractive was 'better pay'. Many respondents in this 2007 survey said that academic pay should be equal to that for clinical work: 'most academic posts are poorly paid compared with clinical work' (female, general practice) was a typical comment.

Other suggested changes included responses we classified as: 'better funding/job security', 'better availability of posts, including locally', and 'preference for clinical/patient contact'. More men than women suggested 'better funding/job security', 'less pressure: publishing/grants/ethics', 'better career pathway', and 'improve academic image/reality'. More women than men suggested 'flexible working hours, part-time posts', and 'more information/career guidance'. More women also said that they had 'tried and didn't like' clinical academic medicine.

Discussion

Main findings

Senior doctors who chose to pursue a long-term career in clinical academic medicine did so because they enjoyed the career, derived satisfaction from it, and found it interesting or intellectually stimulating. Many doctors who had decided not to work in clinical academic medicine had never considered it, or would not consider it, as a career; and preferred clinical work. In our 2007 survey, doctors' suggestions to make clinical academia more attractive included higher pay, better funding and more job security. In our 2012 survey, pay comparability with non-academic doctors was much less often mentioned;

however, doctors mentioned difficulties in finding funding for academic work and a shortage of fellowships, and holding high responsibility in academic work relative to their pay level. There were unfavourable pay comparisons with those in academic work outside the UK. Our 2012 survey found that senior doctors wanted more time for academic work, better supervision, mentoring and careers advice, and the parents in our survey wanted to strike a better work-life balance.

Strengths and weaknesses of the study

Our analysis was national, multi-cohort, recent and was based on the comments of doctors in their own words.

As a qualitative study where only doctors who chose to write relevant comments participated, non-respondent (or non-commenter) bias is possible. The results are not a numerical quantification of views but should be seen as identifying themes, rather than measuring the frequency with which particular views were held.

Comparison with existing literature

Similar reasons for choosing an academic career (enjoyment, satisfaction, interest, intellectual stimulation) were given by doctors in other studies.^{1,2,4} Two issues raised by our doctors are not apparent in other literature. The first is the perception of 'pressure'. Some respondents referred negatively to pressure in academia – to obtain research grants, to manage clinical work alongside research work and so on. Others, contrarily, wrote that they felt that academic work could be less pressured than clinical work and could offer time to think and develop. The second issue was a view, expressed by some, that academic work offered a richer and more interesting and fulfilling career option than pure clinical work. Others appeared bored by academic work. Perhaps here we are tapping into personality traits and how different doctors respond to the same situation.

We did not present factors as closed items on a questionnaire, as other studies have.^{9–11} For example, we did not mention directly the possible influence of role models. In fact, no 1996 graduates cited the influence of a role model in their decision to pursue clinical academic medicine, as found in other studies.⁴ However, it seems likely that role models were important to the 1996 graduates who were following academic careers, but the absence of academic role models for many doctors is the real issue. When doctors talked freely about their training and employment (our 2012 survey), many doctors raised the

Box 1. Examples of reasons for choosing a long-term career in clinical academic medicine, 1996 cohort (numbers of male and female respondents^a raising each theme in parentheses).

Personal	
Enjoyment, satisfaction, interest (36, 35)	Academic work is challenging, interesting and rewarding (male, nephrology)
Intellectually stimulating (36, 34)	Intellectually more challenging with the ability to have more creative ideas and encouraged to be free thinking (female, nephrology)
Enjoy academia (8,3)	Interested in research. Prefer University life (male, oral and maxillo-facial surgery)
Research	
Enjoy research (23,20)	Enjoy asking (and answering) clinically-relevant research questions (female, microbiology)
Advancing medicine, improving care (13, 17)	Important, fulfilling, interesting, opportunity to influence policy and health at a population level (female, public health) Find research vital to providing a good service to my patients (female, radio-therapy and oncology)
Collaboration (5, 3)	Curiosity, opportunity to collaborate & be exposed to alternate views/approaches (male, psychiatry)
Teaching	
Enjoy teaching (12, 20)	Teaching keeps you learning. Important to pass on experiences (female, general practice)
Interest in medical education (4,5)	Desire to be more involved with medical education (both in delivery and planning) (female, nephrology) Opportunity for medical education research (female, nephrology)
Keeping up to date (7, 12)	It informs my clinical practice, keeps me informed and up to date (female, general practice)
The job	
Variety (13, 5)	To keep variety in my job (female, general practice)
Autonomy, less routine (12, 5)	Self-determination, i.e. personal control of work and environment (male, ophthalmology)
Better than just clinical work/NHS (30, 14) ^b	More challenging & interesting. Less 'routine' work/less boring/variability in work (female, academic, specialty not given)
Better career prospects, security (11, 8)	More opportunities in USA for British trained clinicians with an academic base (male, anaesthetics)
Better hours, less pressure (12, 23)	More compatible with family life – more reliable time commitments (female, immunology)

^aThere were 83 male and 77 female respondents. Some doctors gave more than one reason and we counted each reason, hence numbers of themes exceed numbers of respondents.

^bSignificant male–female difference on 'Better than just clinical work/NHS', $\chi^2_1 = 4.87$, $p < 0.05$.

importance of good supervision, support and mentoring.

Many improvements to academic careers suggested by our respondents were also found in other studies,⁴

although the desire for more posts in the doctor's local area is new. In a recent paper on doctors' mobility, we reported a trend towards reduced mobility among doctors as they pursued their careers.¹²

Table 2. Percentage distribution of changes to clinical academic medicine which would have made it a more attractive career option^a, by gender – 1996 cohort surveyed in 2007.

Main categories	Sub-categories	Male (n = 457)	Female (n = 534)	Commenters (N = 991)
Working conditions	Better pay	18.2	14.2	16.0
	Flexible working hours, PT posts	2.0***	10.8	6.8
	More support, mentors, PAs	2.8	3.9	3.4
Working in medicine	Better funding/job security	16.6***	9.0	12.5
	Less pressure: publishing/grants/ethics	8.7**	3.7	6.1
	Improve academic image/reality	5.0*	2.4	3.6
	Prefer teaching	1.7	1.9	1.8
Clinical work	Prefer clinical/patient contact	6.5	8.4	7.6
	Easier to fit with clinical work	5.2	6.9	6.2
	More clinical research ^b	1.1	0.6	0.8
Opportunity	More/better research training	4.4	5.4	4.9
	Better career pathway	6.3**	2.6	4.3
	More information/career guidance	2.8**	7.9	5.5
	Availability of posts, including locally	10.5	8.2	9.3
	Protected time for research	4.1	3.7	3.9
Would not consider/ had not considered	Not interested	5.2	7.3	6.4
	Too abstract, I'm not academic	1.5	2.1	1.8
	No or never considered	33.1	35.1	34.3
	Tried and didn't like	0.7*	2.6	1.7
Other	Other	1.5	1.9	1.7

^aSome doctors gave more than one reason and we counted each reason.

^bDue to low numbers Chi-test could not be carried out for this statement.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Significance tests, comparing men and women: 'Flexible working hours, PT posts' ($\chi^2_1 = 29.5, p < 0.001$), 'Better funding/job security' posts' ($\chi^2_1 = 12.4, p < 0.001$), 'Less pressure: publishing/grants/ethics' posts' ($\chi^2_1 = 9.99, p < 0.01$), 'Improve academic image/reality' ($\chi^2_1 = 4.0, p < 0.05$), 'Better career pathway' ($\chi^2_1 = 7.4, p < 0.01$), 'More information/career guidance' ($\chi^2_1 = 10.9, p < 0.01$), 'Tried and don't like' ($\chi^2_1 = 4.5, p < 0.05$).

Women wanted more flexible working hours, more part-time posts, more information and better career guidance. More part-time provision would benefit women, men and employers, by promoting work-life balance, staff contentment and staff retention.¹³ The Medical Schools Council's 'Women in Clinical Academia Working Group' surveyed senior clinical academics, most of whom graduated in the 1970s and found that they benefited from strong links

with senior role models, but that women medical students were unable to identify such figures in their lives.¹⁴ These third and fourth year students were studied in 2006: during their earlier years in medical school only 1 in 10 medical clinical professors were women, and six UK medical schools had no female professors.¹⁵ Other studies support the benefits of a mentor-mentee relationship for female academic doctors.^{16,17}

Box 2. Examples of changes to clinical academic medicine which would make it a more attractive career option, 1996 cohort.

Working conditions	
Better pay	Clinical academia medicine must pay well. People have families. Academia must be respected and paid well. Plumbers get UKP60 an hour. Does society accept lower pay for the academics? – I don't (<i>male, general practice</i>)
Flexible working hours, PT posts	Ability to work part-time – seems difficult as a woman to combine a family/ maternity leave with an academic career (<i>female, chest medicine</i>) Would have liked to work as a clinical academic but lifestyle & family limit this option (<i>male, paediatrics</i>)
More support, mentors, PAs	Better research supervision & encouragement. Good role models (<i>male, psychotherapy</i>) Better resourced e.g. secretarial support, assistants (<i>male, radiology</i>)
Academic work	
Better funding/job security	Academic medicine and the prospect of applying for grants from charitable bodies and industry fill me with dread: Funding of NHS clinical research would make this more attractive (<i>male, paediatrics</i>) The possibility of a tenured position. It is very off-putting to know that your post will only last as long as your next grant funding (<i>female, endocrinology</i>)
Less pressure: publishing/grants/ethics	After doing my PhD (which I really enjoyed) I made the difficult decision to not pursue an academic career as the university demands on publishing and research output cannot be reconciled with a consultant job doing a reasonable amount of on-going clinical activity of any quality within the NHS. The 50–50 job is no longer tenable (<i>male, gastroenterology</i>) Less emphasis on publishing and citation index. Less emphasis on getting grants more emphasis on research (<i>female, forensic psychiatry</i>)
Improve academic image/reality	I have no interest in churning out unreadable serum rhubarb studies that change nothing (<i>male, general practice</i>) I'll leave the forward thinking to others. I prefer to get on with the work (<i>female, geriatrics</i>) Academics are a breed of self-serving megalomaniacs (<i>female, rheumatology/ rehabilitation</i>)
Prefer teaching	If I could get into this branch of medicine without an MD an obligation to research. I would love to teach only (<i>female, obstetrics and gynaecology</i>)
Clinical work	
Prefer clinical/patient contact	I have not chosen academic medicine as a career as I love patient contact. As much as I love teaching, I would miss patients if I engaged in more teaching (<i>male, general practice</i>)
Easier to fit with clinical work	I would like the opportunity to work in an environment that offers the opportunity for half-time clinical, half-time academic, but the pressures of providing a clinical service preclude this (<i>female, geriatrics</i>)
More clinical research	Most research did not seem that clinically relevant to me at earlier stages in my career when I might have pursued it (<i>male, anaesthetics</i>) Research does not need to be in a laboratory and clinical research is often the most valuable (<i>male, urology</i>)
Opportunity	
More/better research training	Better training in research methodology (<i>male, emergency medicine</i>)

(continued)

Box 2. Continued.

Working conditions	
Better career pathway	More structured career path. I have done a PhD in order to gain entry to SpR [specialist registrar] grade but found it extremely difficult to continue research (<i>male, cardiology</i>) More visible route/career pathway (<i>female, general practice</i>)
More information/career guidance	A career plan explained to me at an earlier stage (<i>female, general medicine</i>) Greater exposure to academic medicine as a career choice when I was an undergraduate and more interaction as a postgraduate (<i>male, obstetrics and gynaecology</i>)
Availability of posts, including locally	Location. It is difficult to work in academia whilst living in a rural area (<i>female, general practice</i>) More job vacancies/opportunities (<i>male, ophthalmology</i>)
Protected time for research	More freedom from clinical duties to engage in research (<i>male, anaesthetics</i>)
No	
Not interested	Has never interested me (not a completer finisher!) (<i>female, general practice</i>) Dull! Dull! Dull! (<i>male, general practice</i>)
Too abstract, I'm not academic	I would not choose clinical academic medicine because I just lack the level of intellectual rigour required. I find the process of writing grant applications unutterably tedious (<i>female, public health</i>)
No or never considered	Not explored it as an option (<i>male, psychiatry</i>) Would not consider this (<i>female, general practice</i>)
Tried and don't like	I enjoy making diagnoses and stabilising sick patients. I find research dull, (though I've done a lot in the past) and rarely related to my clinical practice (<i>female, emergency medicine</i>) I had my fill of research when doing a science degree and research for a PhD. I have absolutely no desire to do any research (<i>male, general practice</i>)
Other	
Other	A stronger research base in anaesthetics would have made me more likely to consider it. At present there are very few strong academic departments in the UK (<i>female, anaesthetics</i>)

Implications

Many doctors do not consider a career in clinical academia. It is important to raise awareness amongst medical students. Women need more information about clinical academic careers, and senior women clinical academics should be more involved in providing advice. Trainers should provide more time and support to doctors to undertake academic work. Local training programmes may benefit by considering these issues.

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.

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Appendix – Quotations referred to in the results (1999 and 2000 cohorts)

Ref.	Quotation
M1	'too little flexibility to allow people to develop specialist skills or academic interests – hence the reason for me taking unpaid leave to complete my thesis' (medical specialties)
F2	'I am an employed consultant with only 1 SPA – as are all newly employed consultants in [named place]. I am therefore not involved in teaching, audit, research etc. and cannot foresee a time when I will be' (anaesthetist)
M3	'1 session per week for combined Research/Admin/Teaching/Study did not allow for the degree of development I had hoped' (surgeon)
F4	'I get time and funding for professional development. I get time (in work) to go to meetings, run committees, teach, do audit and research and supervise trainee projects' (anaesthetist)
M5	'[I] have benefited from great advice and support from key, senior colleagues' (clinical academic, clinical oncology)

(continued)

Continued.

Ref.	Quotation
F6	'it would be great to have a mentor outside my rotation who can advise me regarding my academic/clinical career and also how to combine that with having a family' (clinical academic, public health)
M7	'lacked good advice/mentoring in terms of planning research or subsequent steps to get a good consultant post' (medical specialties)
F8	'I love being a doctor but if I knew the personal and family sacrifices my husband (who is a surgeon) and I have made since qualification I doubt I would have chosen this profession. The relentless pursuit of jobs, research to get decent name for yourself, moving house and fellowships my husband has had to do has impacted hugely on my career and our family life' (general practice)
F9	'juggling full-time work and child care is all consuming with little time for extras to improve one's CV. An organised rota with protected admin/study/research time as I had at [named hospital] is great and enabled me to make a successful fellowship application and produce publications. This is in contrast to [named hospital] where I worked previously, the rota was shambolic and consultants un-supportive' (medical specialties)
F10	'a lack of mentorship for women in academic medicine. . .this seems relevant now that I have a child. It is always stunning to me how women are greatly underrepresented in the higher echelons of academia and now that I have my own sights on such positions I wonder how difficult it will be to "break through". Already find it very tricky with clinical training/academic demands' (clinical academic, psychiatry)
F11	'fighting to get an honorary NHS contract' for a year and found it 'difficult working very long hours in general medicine while pregnant – feel that this made me quite ill. Research funding is very competitive and difficult to get if working part-time (e.g. MRC/Wellcome intermediate fellowships)' (pathologist)
M12	'I spent 3 years in research and did an international fellowship which I believe greatly helped me personally and in my training' (urologist)
M13	'I enjoy my work very much and would only consider changing jobs if my funding dried up!' (clinical academic, oncology)
M14	'I have always been very keen on being a clinical academic and have enjoyed my research time doing a PhD. Subsequently there have been essentially two reasons that I have ended up taking a [hospital] consultant job rather than looking to continue down an academic path. Firstly job security and the uncertainty of academia. Secondly the scarcity of consultant jobs in respiratory medicine. Academia is exciting and challenging and I feel that I was doing well in academia and had support from several senior academics for my career. However the lack of job security prevented me from continuing when I have a young family and a large mortgage' (respiratory medicine).
M15	'[I am] moving towards an academic career but the obstacles are huge compared with [the] NHS route and plenty of interested colleagues have given up on academia and taken an NHS job – I have stuck with it but at some personal cost' (aspiring clinical academic, medical specialties)
M16	'I am lucky that my path as a clinical academic has been a) supported by a strong research/clinical research institution and b) fortunate with fellowship awards' (clinical academic, psychiatry).
M17	'trying to develop a post-PhD research career while undertaking clinical duties was very challenging' (clinical academic, medical specialties).
M18	'I have greatly enjoyed my research experience so far, but remain undecided if I want a lifelong academic career or if I would prefer to be a NHS clinician with an active interest in research' (clinical academic, medical specialties).
F19	'educated myself out of employment in the place I would prefer to live, at the moment both remuneration & security suggest that we are punished for taking a higher degree rather than rewarded' (academic clinical oncologist)

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Ref.	Quotation
M20	'poor access to protected teaching whilst working' (paediatrician)
M21	'few consultants have a good understanding of good teaching/training practice. In 7 years I only had 1 year of a meaningful "Learning Agreement" process' (surgery)
F22	'senior registrars reaching senior positions having worked fewer hours and having experienced less' (anaesthetist)
F23	'very concerned about the future threat to reduce SPA time significantly. Fear I will have to use that time to meet CPD [Continuing Professional Development] requirements and may have to give up other roles such as teaching' (radiologist)
M24	'we went in to this to be clinicians, not to be paper churners. . .most of the measures have nothing to do with diagnosis or treatment. [The lay public] do not care that I have written a thesis on some minutiae in medicine that will be outdated soon' (surgery)
M25	'I spent 3 years in postgraduate research which has been completely unhelpful to my career and the trend for postgraduate higher degrees should be closely looked at' (surgery)
M26	'work life balance in the US is strongly balanced towards work. However, academic medicine is strongly encouraged' (surgery)
F27	'opportunities for research funding in my speciality are very limited in the UK' (medical specialties)
M28	'as a husband and father of 3 children, with a healthy interesting job on offer here, with the opportunity to teach and direct research, I can offer my family some stability without having to commute around the country and so for the time being, staying in Australia is the better option' (surgeon)
F29	'study leave is capped at £600 a year which doesn't cover even the essential recommended courses' (clinical academic, medical specialties)
M30	'to obtain funding for a PhD in medical education despite having done an academic training fellowship, having done research in education, having a relevant master's degree and having been an active member of ASME [the Association for the Study of Medical Education]' (General Practitioner)
M31	'I feel the UK is very poor in its support for anything other than service delivery development, and pays only lip service to the obligations of our profession to training or academic pursuit' (surgery)
F32	'on paper, I am being given a great opportunity to progress in research and to work less than full time, but in reality, I am being given a heavy burden of clinical duties to cover a poorly staffed ward' (clinical academic, clinical pharmacology)
F33	'Skills are required now that weren't required when I first started training and doctors need working knowledge of very different things in order to function effectively as consultants. It is now very difficult to find the time in a job plan to do all the things I would like to, and was previously encouraged to do, such as teach and do research' (paediatrics)
M34	'there are very few post-doctoral fellowships that would allow consultant pay-scale and this has forced me to take on a full NHS post without an honorary university contract in order to still have some grounding for my academic pursuits' (medical specialties)
F35	'embarrassed [by] how little I earn at my level of training. Currently in clinical research managing a large trial budget (£2 million). Huge level of responsibility and earning £35,000. My husband financially supports my career choice and relocated his life based on where I'm based. A career in hospital/academic medicine is just not sustainable as paid so little' (medical specialties)

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Ref.	Quotation
M36	PhD salaries and the balance between work and family life are much better in Denmark than in the UK. Although choosing a PhD is not normally financially motivated, a higher salary [while doing a doctorate] in the UK would help!' (other medical)
M37	'the flexibility of this non-training grade has allowed an acceptable work/life balance & also the development of a 'portfolio' style career involving a large commitment to teaching & medicine writing. Having obtained a PhD before entering medicine I plan to reduce my clinical work & move into academic research/teaching over the next few years' (emergency medicine)
M38	'various pieces of work that are all inter-related: academia and clinical, but also writing books, journalism, live performances etc. on medical and scientific issues. At any time there are various pulls in each direction but I doubt I'd ever leave any of those roles completely' (clinical academic, psychiatry).