

BMJ Open Is there a sufficient supply of clinical academics for UK medical schools? A retrospective cohort study

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ABSTRACT

Objectives Clinical academics lead research to deliver medical advancements while also teaching in medical schools to maintain high-quality medical services. The objective of this project was to determine if there is a sufficient supply of clinical academics for UK medical schools.

Design Retrospective cohort study.

Setting Data were extracted from the UK Medical Education Database and the General Medical Council (GMC) annual National Trainee Survey between 2012 and 2022.

Participants 1769 registered UK doctors with academic training and a certificate of completion of training.

Main outcome measure The percentage of doctors with clinical and academic training who ended up as incumbent clinical academics at UK medical schools.

Results Approximately 50% of doctors with clinical and academic training were matched as incumbent clinical academics at UK medical schools. There was a low annual rate of incumbent clinical academics leaving their post.

Conclusion Either clinical academic trainees do not find jobs at medical schools, or they do not want the jobs that are available. These results are indicative but not conclusive as generalisation is compromised by inconsistent disclosure of data by medical schools. We discuss variables which may contribute to the loss of clinical academics and explore the health economic case for clinical academic incentive packages to improve return on training investment.

INTRODUCTION

Britain's healthcare industry is facing challenges related to workforce numbers and allocation of resources. This includes a decline in the number of clinical academics,¹ which occurs as the UK life sciences industry meets significant global competition.² The number of industry clinical trials initiated in the UK per year fell by 41% from 2017 to 2021,³ despite the success of the COVID-19 vaccine and therapeutic trials.² There is a similar decline in clinician academics in the USA, with concerns raised about a lack of funding and workforce diversification.⁴ A previous study evaluating clinical academic career progression found that the UK Academic

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study was strengthened by the use of UK wide data from the national UK Medical Education Database and the GMC annual National Trainee Survey.
- ⇒ Although the overall dataset is large, the study is limited by gaps in the data available from medical schools, including GMC number disclosures.
- ⇒ These results are indicative but not conclusive as generalisation is compromised by variable access to data from medical schools.

Clinical Fellow (ACF) programme from 2006 to 2015 was achieving high rates of long-term academic impact.⁵ Clinical academics provide at least three essential functions in the UK life sciences industry: they deliver basic sciences research, they teach at higher education institutions (HEIs), and they lead clinical trials to evaluate the introduction of products into healthcare,⁶ which will ultimately improve patient care and outcomes. To provide this pipeline for the next generation of clinician scientists, the National Health Service (NHS) funds a training programme for academic clinicians. The conversion rate of this programme to produce substantive clinical academics, providing a strong future academic workforce, was investigated by this study.

The recently published NHS England Long Term Workforce Plan proposes doubling the number of medical school places by 2031/2032,⁷ which in turn would suggest an increase in the need for clinical academics to cover the proportionate increase in medical school teaching requirements. The UK academic sector enjoys four of the world's 10 leading universities in international research.⁸ In order to maintain the research quality standards, it is essential to secure the pipeline of clinical academics who will be able to drive research from bench to bedside for the benefit of patients. This same challenge has been explored among US hospital



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doctors, in which representatives from 13 institutions raised concerns about the long-term academic workforce, including articulating the importance of a ‘commitment to the academic mission in the setting of rapid and unpredictable clinical growth’.⁹

The recent UK Government commissioned report by Lord O’Shaughnessy² highlights three observations directly relevant to the supply of clinical academics. First, that research is not prioritised across the wider system of the NHS. Second, healthcare professionals are not incentivised to contribute to research. Finally, the NHS Long Term Workforce Plan could explore developing a clinical trials career path.² The UK Medical Education Database (UKMED)¹⁰ holds data on all postgraduate trainees from 2012 onwards and can be linked to staffing patterns across the health service. We set out to explore the career path of clinical academics in the UK. The objective of this study was to determine if the existing supply of clinical academics is sufficient.

METHODS

Study design and setting

This was a retrospective cohort study in compliance with Strengthening the Reporting of Observational Studies in Epidemiology guidelines,¹¹ which used the UKMED¹⁰ and data provided by the Medical Schools Council (MSC), UK. In order to identify the potential supply of clinical academics, GMC statisticians used the GMC annual National Trainee Survey (NTS)¹² to identify the potential supply of doctors, from 2012 to 2022, who were academic trainees (ACF, clinical lecturer (CL) or had an academic national training number) and have gained a certificate of completion of training (CCT).

The search of the existing medical school clinical academics workforce was defined by those who have a full registration with the GMC, a substantive contract of employment with the university and an honorary clinical contract with the NHS or a formal ‘A+B’ contract. These data helped to quantify the percentage progression from ACF training into clinical academic positions. This outcome is based on being able to find clinical academics in the workforce.

Data source

To establish the potential and existing clinical academic workforce, data were sourced from the GMC Register, GMC National Training Survey and the annual UK MSC survey of medical school clinical academics. The UKMED¹⁰ enabled this comparison process of those who were eligible to be a substantive clinical academic by completing training, and those who had taken up these jobs. However, not all medical schools provided a complete return. This means the results drawn from the clinical academics that could be matched may not be representative. The focus on 2018–2021 survey is due to the missing medical school data which limits the bracket of matched data; this means that only records of academic

trainees and the CCT register between 2018 and 2021 can be analysed, restricting the scope of the study.

Patient and public involvement

None.

RESULTS

The mean annual number of academic trainees reported in the NTS from 2012 to 2022 was 3100, and the number of academic trainees who ‘completed’ training from 2012 to 2021 was 3282. The status of ‘completed’ was determined when a trainee was no longer recorded to be in training in the following year. The number of academic trainees from 2012 to 2021 who had both ‘completed’ training and have gained a CCT putting them on the general practitioners (GPs) and/or specialist register was 1769. [Figure 1](#) illustrates the demographic summary of MSC Survey respondents in 2021 who could be validated against a General Medical Council (GMC) number.

Of the 1769 former academic trainees with CCT, 647 (36.6%) matched against the clinical academic workforce data. However, since this 647 only matched approximately 75% of the clinical academic workforce, this equated to 49% of the total clinical academic workforce. When the register of GPs with CCT and academic training is compared with the GP clinical academic survey, there is a 75% loss. When the register of specialists with CCT and academic training is compared with the specialist clinical academic survey, there is a 45% loss.

[Figure 2](#) shows there is a good retention of clinical academics, although more recent years’ (2018 and 2019) data reveal a higher level of exit. Overall, there is a low annual rate of incumbent clinical academics leaving their post. [Figure 3](#) shows the wide variation in clinical academic workforce across medical schools based on all MSC data over years 2013–2020.

DISCUSSION

Analysing UKMED data, we have shown that approximately half of the fully qualified academic doctors do not progress into clinical academic work in UK medical schools. There are substantial problems with long-term retention in the academic workforce; the NHS is funding training to produce clinical academics but not retaining long-term academic output in return on initial investment. Either clinical academics cannot find jobs at medical schools, or they do not want the jobs that are on offer. The findings portray a valuable pattern, but more reliable data are needed for granular analysis. This workforce evaluation is important for planning the future of clinical academia and ensuring the efficient use of NHS resources.

Trainee clinical academics are leaving the academic pathway. Doctors with a CCT and completed academic training are taking up non-clinical academic employment. Our results show that clinical academic gender

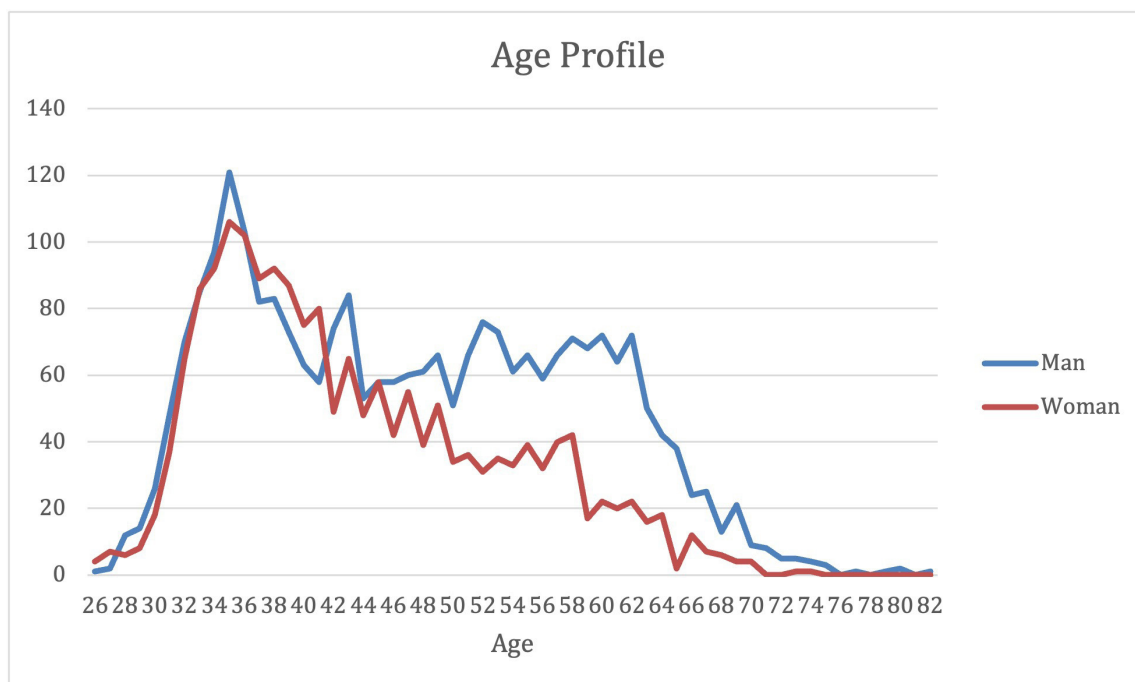


Figure 1 Age and gender distribution of validated workforce of 2021. Gender: male, 2607 (58.6%); female, 1845 (41.4%). Primary Medical Qualification: European Economic Area, 465 (10.4%); International Medical Graduate, 320 (7.2%); UK, 3667 (82.4%).

distribution is comparably equal under the age of 40, but over the age of 40, the dominance of male doctors may reflect the historical inequality in favour of male clinical academics. The lack of flexibility in training may undermine a balance of clinical, academic and family commitments. It is important to note that there is a complex relationship between academic training and contribution to UK medical education and research output. Doctors with academic training and PhDs are

not necessarily just valuable for academic careers; of the 50% not employed by a medical school, those taking up non-clinical academic employment may still be making substantial contributions to the academic output of the university, such as through clinical teaching, research and national pilot programmes. Further light would be shed on this by an analysis of the job plans of the unaccounted 50% doctors with CCT and academic training who retain a GMC license but are not substantive clinical academics.

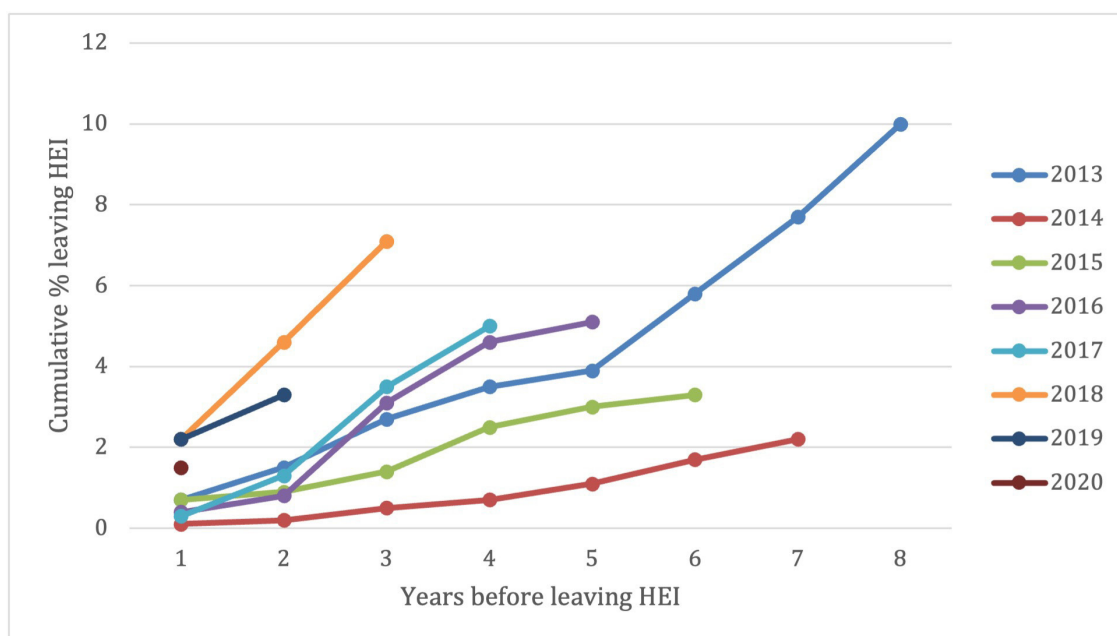


Figure 2 Retention of clinical academics (CA). Each line represents the first year in which a CA is identified at an individual HEI (higher education institution) and the subsequent percentage (%) of clinical academics leaving that HEI.

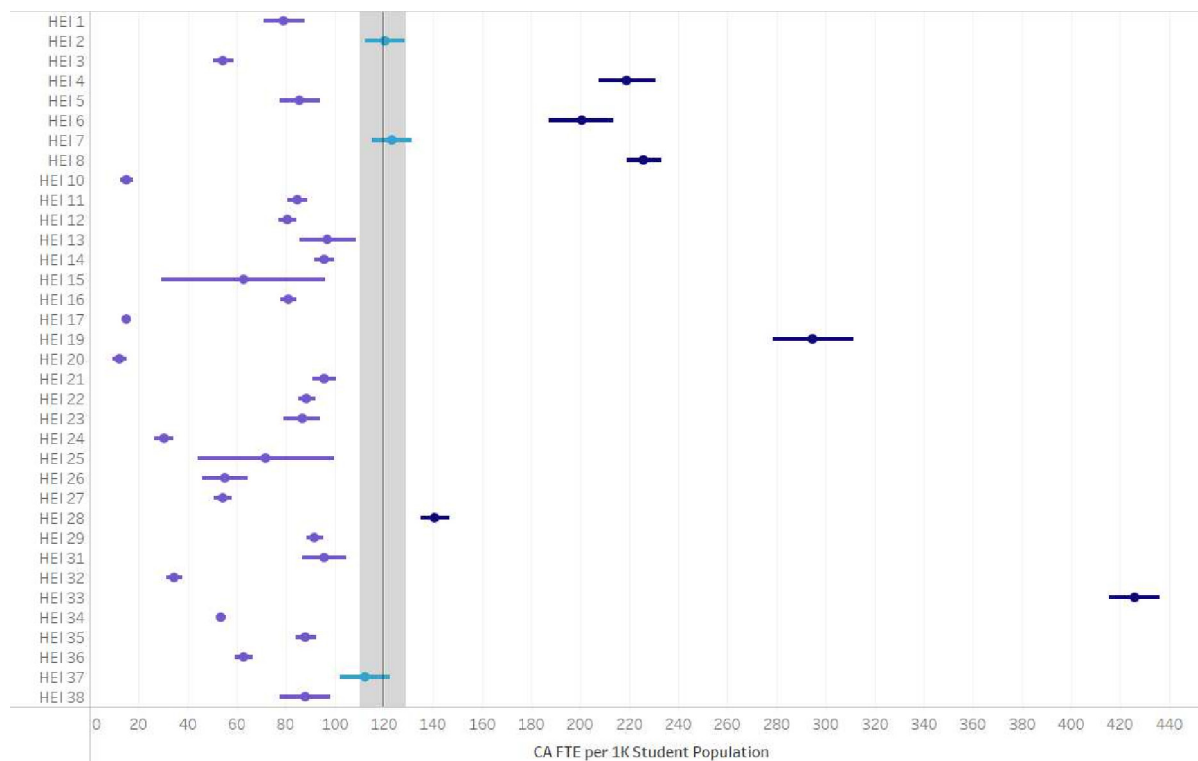


Figure 3 The number of clinical academics (CA) reported in the Medical Schools Council survey from 2013 to 2020, expressed in full-time roles (FTE), per 1000 students at the medical schools of anonymised higher education institutions (HEI). The dot is mean number of FTE per 1000 students and the grey vertical band is the national 95% CI.

Which non-clinical academic employment packages are preferred to being a clinical academic? This could be explored by matching GMC designated body data with the NTS survey data to identify the alternative employment destinations of academic CCT holders.

Our data demonstrates that some medical schools offer considerably more academic activity per student compared with national averages. Academic impact is made up of both current capacity for academic output and ability to train future academics. This raises policy questions related to enabling the most academically successful medical schools to receive privileged funding and incentive arrangements to maximise their impact on UK life sciences. However, this may have the unintended consequence of widening the gap between research that is carried out by various universities, which may further widen health inequalities and lead to inequities in terms of career development opportunities for clinical academics depending on where they are located across the country. This could also impact attrition and retention rates in the longer term.

Variables that undermine clinical academic retention

There are likely to be both 'push' and 'pull' factors which lead to clinical academics not taking up long-term roles at medical schools. There is high rate of burnout among UK doctors.¹³ The negative trends observed in the responses to GMC National Training Survey questions on burn-out could undermine workforce retention.¹² In June 2023, the total number of NHS vacancies was

125 572.¹⁴ Research conducted by the University of Bath Institute for Research Policy identified psychological stress, workload, staff shortages and pay as the top four reasons why staff leave the NHS.¹⁵ 50% of staff reported 'feeling very tired or drained' most days or every day.¹⁵ The patterns observed in our data may be due to the same factors impacting the wider medical workforce, but the difference with clinical academics is the more specific economic damage that their disengagement causes long term. It is striking to listen to the human stories of doctors considering leaving the profession due to poor workplace facilities, limited childcare, inflexible hours, lack of time and career progression opportunities. A systematic review of intervention to strengthen clinical academic pathways highlighted the importance of senior mentors as part of supportive measures to protect research career development.¹⁶

Additional 'push' factors in clinical academia are likely to include that academic centres of excellence tend to be in centres which are too expensive to raise a family and it is too precarious living grant to grant. On the other hand, 'pull' factors are likely to include the allure of interesting and rewarding jobs in private industry and more influence on education and research policy outside of medical schools. Clinical academics work as both GPs and specialists. Loss of GPs from the workforce may occur in a number of ways including temporary career breaks, leaving the NHS to work elsewhere, reduced working hours and early retirement.¹⁷ Data from the MSC Clinical

Academic Survey show a 25% reduction in senior CL doctors over the last decade and an overall 4% decline in clinical academics.⁶

Health economic case for clinical academic incentive packages

The positive effect of health research on economic development is well recognised.^{2 18} Commercial research associated with the National Institute for Health and Care Research (NIHR) Clinical Research Network generated £1.8 billion in gross value added to the UK economy in 2018–2019.² The UK life science industry generated £94.2 billion in turnover in 2021, a value that has seen continuous growth in real terms since 2013.² The number of patients enrolled on commercially led studies supported by the NIHR dropped by 44% between 2017 and 2022 from around 50 000 a year to around 28 000.² The total direct cost of this near halving of patients recruited to commercial research activity in the NHS over the 5-year period was in the region of £360 million, a sum which has to be sourced from the taxpayer instead.² The Royal College of Physicians (RCPs) have reported that 57% of doctors want to be more involved in research, but 53% of respondents to a survey of RCP members and fellows cited a lack of time as the biggest barrier to research participation, alongside funding and a perceived lack of skills and supportive culture for research.¹⁹ The economic case for the bespoke and flexible arrangement of clinical academic contracts is based on their importance to the UK's leadership in global life sciences, both in education and evidence generation. The reinforcement of clinical academics will bring more investment to the UK, bring more high-quality jobs, bring more medicines to market and provide more tax revenue for the state.²

Study limitations

These results are indicative but not conclusive as generalisation is compromised by variable access to data from medical schools. There are a number of limitations to discuss. First, not all medical schools provided a data return to the MSC. Second, some medical schools did not provide individual GMC numbers as part of their return. Third, some records appear to be duplicated, although a lack of GMC numbers makes this difficult to confirm. Fourth, not all medical schools provided GMC numbers, date of birth and gender which match against the GMC list of registered medical practitioners and, therefore, cannot be validated for matching against the NTS. For the purposes of matching against the NTS, only validated GMC numbers can be used. In addition to the inability to match against all clinical academics, the NTS has only been consistently collecting data since 2012, so it is not possible to match all clinical academics since many will have completed training before 2012. The analysis is only quantitative, so there is no qualitative research to understand why former ACF and CL do not take up a clinical academic position at a medical school. This study only considers the clinical academic workforce during

the period of 2018–2021. This means that former ACFs who take up a clinical academic position prior to 2018 and leave prior to 2018 will not be 'counted' in the ACF for clinical academics progression. When adjusting for the 'missing' (~25%) clinical academic workforce, this study assumes each HEI has the same need for clinical academics, although each HEI has a different way of teaching. Finally, this paper focuses on clinical academic careers pertaining to medical doctors. However, future studies should examine clinical academic career pathways available to other healthcare professions, such as dentists, nurses, midwives and allied health professionals (where there are also shortages of clinical academics). A more interdisciplinary approach, empowering other members of the healthcare workforce to develop their clinical academic careers, can help tackle the challenges facing NIHR-supported studies.

CONCLUSION

We have demonstrated a loss of Clinical Academics from their pathway to substantive posts. We need to look to improve clinical academics workforce data collection to enable a more comprehensive match against other data sources, look at variations in academic trainee progression into clinical academic positions by medical school, specialty and postgraduate training programmes. Better incentive frameworks for clinical academics need to be established either through remuneration, accommodation or allowances to work remotely in more affordable locations.

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Contributors EH and JED developed the research concept and question. WJW and AHS analysed data and wrote the manuscript. All authors edited and approved the manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval The Imperial College London Education Ethics Review Process (EERP) has approved that this research project is exempt from the need to apply for ethics approval. The study authors worked with previously pseudonymised and matched data, provided by the GMC. No data were attributable to any individuals and the authors did not have access to GMC numbers.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article. Raw data are available on application to UKMED.

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