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Understanding medical students' intercalation decisions to preserve the clinical academic pipeline: a mixed-method survey

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Abstract

Introduction Clinical academics are pivotal in advancing innovations by integrating clinical practice with education and research. The clinical academic workforce in the UK has struggled with a persistent shortage, now reaching a critical point. A recent nationwide decline in medical students opting for intercalated degrees, which provide early research exposure during undergraduate medical education, significantly contributed to the workforce crisis. However, the underlying factors for this recent decline in intercalation remain unclear. This study investigates the factors influencing medical students' decisions to intercalate, focusing on personal motivations, and perceived value in the context of rising living costs and changing national policies.

Methods We utilised a mixed-methods survey to explore the factors influencing medical students' decisions regarding intercalation. Quantitative data from closed-ended questions were analysed using descriptive statistics and chi-square tests to identify associations between variables. Thematic analysis of qualitative data from open-ended questions was conducted using Vroom's expectancy theory as an interpretive lens.

Results A total of 50 students completed the questionnaire. The chi-square test demonstrated a significant association ($p = 0.001$) between the cost-of-living crisis and the decision to intercalate. The thematic analysis of non-intercalators highlighted the theme of financial burden, including reduced student loans, increased debt, and family financial stress. Conversely, we developed the theme of effective financial strategies and support systems from intercalators. The perception of career benefits significantly influenced intercalation decisions ($p < 0.001$). Furthermore, a change in policy to remove extra consideration for intercalated degree holders in UK foundation applications significantly affected decisions ($p = 0.014$). Thematic analysis of non-intercalators identified the lack of perceived career advantage, including a loss of extrinsic motivation and perceived non-recognition. Intercalators cited long-term career benefits, research skills and confidence, portfolio building and networking as their primary motivators.

Conclusions Our study provided new insights into the socioeconomic, policy-related, and motivational differences among students that influence intercalation decisions. Financial constraints and the removal of extra consideration for intercalated degrees in physician training selection were major deterrents, particularly for students from diverse backgrounds. Future research should focus on developing targeted interventions to mitigate challenges and support a diverse and equitable clinical academic workforce.

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Keywords Undergraduate, Medical education research, Intercalation, Academic medicine, vroom's expectancy theory

Introduction

Clinical academics are doctors who undertake clinical education and research alongside treating patients; hence, they play a crucial role in providing the evidence base for improved patient care and cutting-edge treatments [1]. The clinical research workforce has been facing a shortage for nearly two decades internationally, with some nations reaching a crisis point [2]. In the United Kingdom (UK), medical academia is experiencing a 'deepening crisis', with some specialties such as primary care, accounting for only 0.4% of clinical academics [3]. The House of Lords Science and Technology Committee's inquiry into the shortage of clinical academics highlighted the concerns of a decrease in intercalated degree uptake, which offers students in medical training the initial exposure to research [4]. The decline of intercalating medical students meant that fewer future clinicians were exposed to research early in their careers, which could limit later opportunities and reduce the proportion of younger clinical academics. Furthermore, the decline in the clinical academic workforce will significantly challenge the National Health Service (NHS) Long-Term Workforce plan and the government's vision for the future of UK clinical research [4].

An intercalated degree in a medical program signifies an additional year of focused study undertaken during the standard undergraduate medical degree curriculum. This program allows students to supplement their medical training by pursuing in-depth knowledge in a specific discipline relevant to the field. The successful completion of an intercalated degree results in the awarding of two qualifications: a medical degree and an additional degree, typically a Bachelor of Science [5]. The advantages of intercalation are well-documented in the literature, including enhancements in learning styles [6], exam performance [7–9], academic skills [10, 11], research productivity [12, 13], long-term career prospects [14, 15], and the likelihood of pursuing academic careers [14, 16–18]. However, a study examining seven medical schools across the UK revealed a modest intercalation rate of only 10.5% between 2014 and 2020 [19]. In recent years, there has been a significant nationwide decline in the number of medical students opting to intercalate, with estimates indicating a decrease of approximately 35–45% in the past 12–24 months [20]. Despite the urge from The House of Lords on the government to determine the underlying factors regarding the decrease in intercalating students [4], an existing gap remains in the literature.

Evidence suggests two primary contributors to this decline within the UK. First, medical students have been experiencing financial struggles and insufficient funding, exacerbated by the prevailing cost-of-living crisis and inflationary pressures [21]. A national survey in the UK highlighted that many medical students are cutting down on essential living costs and working during term time [22], with some working multiple jobs during their intercalated year [23]. In addition, those students who intercalate will rely on NHS bursaries for an extra year of study, and this bursary is reported to cover only one-third of their living expenses [22]. This financial strain is particularly acute for students from a widening participation background. Second, one of the most common reasons cited for intercalation is gaining a competitive career edge [24]. The selection process for foundation training programmes in the UK used to award up to five extra points for intercalated degrees, which boosts students' chances of securing their preferred foundation posts [9]. However, this point advantage has recently been removed [25]. Subsequently, specialised programmes featuring dedicated academic blocks also ceased considering intercalated degrees in their selection processes starting in 2025 [26].

Theoretical framework

Understanding students' decisions surrounding intercalation requires a complex analysis of their aspirations and perceived costs and benefits. Vroom's expectancy theory offers a valuable framework for exploring students' decisions to intercalate and their belief in intercalations' desired outcomes through three main variables: expectancy, instrumentality, and valence [27]. Expectancy refers to students' belief that their effort will lead to successful intercalation. What factors served as facilitators or barriers to successful intercalation among medical students? The second aspect of Vroom's theory is instrumentality, which reflects the student's belief that successful intercalation will lead to rewards. Does decreasing academic recognition of intercalated degrees in UK foundation applications affect students' perceptions of rewards around intercalations? The last component of Vroom's theory was the value students placed on the rewards of intercalation, known as valence. We proposed that there is a difference in the perceived advantage or disadvantage of intercalation between students, which could affect their decisions. As the value of each of the three variables increases, we hypothesised that students' motivation towards intercalation increases. Given the importance of curbing the declining intercalation rates to preserve the clinical-academic pipeline, this research paper aims to investigate the influence of financial considerations,

personal motivations, and the perceived value of intercalation on students' decisions to intercalate in the current climate of a rising cost-of-living and the removal of points for intercalation in the UK foundation application process. Our research questions are as follows:

1. What factors influence the cost-benefit analysis of students' decisions around intercalation?
2. How do students perceive the advantages and disadvantages of intercalation, and how does this factor into their decisions?

Methods

Research context

At the University of Sheffield, medical degrees are offered as a five-year undergraduate course. Pre-clinical years are system-based, and clinical years are rotational and longitudinal placements. The Sheffield Medical School retains a traditional assessment system. All medical students are given the opportunity to undertake an intercalated degree after their third year. Upon return from successful intercalation the following September, the students will face December exams. Following graduation, medical students in the UK enter a two-year foundation program to gain further practical experience before specialising. At the time of the study, the selection into foundation had changed from meritocracy-based, such as considering educational decile performances in medical school and additional educational achievements (e.g., intercalated degrees), to a preference-informed allocation system.

Study design and population

The knowledge and understanding of the phenomenon of intercalation are explored from a primarily post-positivist orientation. We distributed a mixed-method survey to third-year medical students ($n = 280$) and intercalating students ($n = 97$) in Sheffield in the academic year 2022/23. Our inclusion criteria were full-time third-year medical students and intercalating students at The University of Sheffield; all other students were excluded. Data collection and interpretation are primarily objective, but subjectivity is valued from the qualitative data gathered from the open responses, aiming to test, refine, and refute our hypothesis.

Data collection

Our literature review revealed no surveys connected to the study's research questions, so we developed a mixed-method survey instrument. We based our initial survey domains on the literature review and revised our questions based on discussion outcomes with research team members and a small panel of intercalating medical students. The finalised survey contained four main types of items: (1) demographic questions related to gender, ethnicity and widening participation parameters; (2) binary (yes/no) questions on the impact of external factors on students' decisions around intercalation, used to capture clear, dichotomous responses; (3) qualitative open-ended questions to explore 'how'; and (4) multiple-choice questions on students' perceptions of the benefits and disadvantages of intercalation. The survey was piloted with a sample of medical students to enhance clarity and relevance (Supplementary material).

Quantitative data analysis

The responses to the closed-ended questions were analysed using descriptive statistics and chi-square tests. We generated descriptive statistics such as frequency tables and percentages to summarise the distribution of responses for each question. Chi-square tests were used to identify associations between categorical variables, such as the impact of the cost-of-living crisis on the decision to intercalate or the influence of the removal of the points system on student motivation.

Qualitative analysis

Open-ended questions within the survey provided qualitative data in the form of student quotes ($n = 250$). Thematic analysis, informed by the Miles and Huberman framework [28], was applied to analyse these quotes, using a multi-stage approach. A dominant category coding approach was used to identify the primary factor influencing each student's decision. Initial codes were developed based on the research questions and refined through iterative readings of the data. Four researchers (JL, OG, SC, and JT) independently coded the data, assigning each quote to a single dominant theme to ensure focus and avoid inflating frequencies. JL then reviewed the coded data from OG, SC, and JT, comparing coding decisions across the dataset. Discrepancies were resolved through discussion with CS to ensure consistency and analytical rigour. The coding framework was subsequently refined, and themes were defined and named. Representative quotes were selected to illustrate each theme.

To enhance trustworthiness and credibility [29], we maintained a transparent coding process and triangulated qualitative findings with quantitative results and existing literature. We also engaged in regular reflexive discussions to consider how our perspectives might influence the analysis. JL is an early-career clinical academic who did not intercalate due to financial constraints, contributing a personal understanding of structural barriers. OG, SC, and JT are third-year medical students who brought recent lived experience to the study. CS, as Director of Intercalated Studies, offered institutional and policy insight, while CR, a professor of medical education

not directly involved in intercalation programmes, contributed an external perspective.

Ethical approval

The study was approved by the University of Sheffield Medical School Ethics Committee (Ref: 048087) and all students provided voluntary, informed written consent to participate.

Results

In total, 50 participants were involved in this study, comprising 29 third-year medical students (response rate 10%) and 21 intercalating medical students (response rate 22%). Among the third-year students, 16 (55%) decided not to intercalate, while 13 (45%) decided to intercalate in the coming year. We grouped students who decided to intercalate (i.e., starting intercalation in the coming year) and who are currently intercalating together and compared them with non-intercalators. We presented the quantitative results related to cost-benefit analysis on intercalation decisions and used the qualitative results to unpack the quantitative findings.

Table 1 Participants' demographics and correlation with intercalation decisions

Criteria	Respondents *n* (%)	Chi-Square ($\chi^2(2)$)	*P*-value
Gender			
Women	37 (74%)		
Men	12 (24%)		
Non-binary	1 (2%)	2.831	0.586
Ethnicity			
White	39 (78%)		
Mixed/Mixed ethnic groups	3 (6%)		
Asian/Asian British	4 (8%)		
Black/African/Caribbean/Black British	3 (6%)		
Other ethnic group	1 (2%)	6.682	0.571
School background			
Non-selective state school (UK)	31 (62%)		
Selective state school (UK)	5 (10%)		
Independent/fee paying school (UK)	13 (26%)		
Independent/fee paying school (outside UK)	1 (2%)	8.160	0.227
Parental background			
At least one parent had a university degree	37 (74%)		
Neither parent had a university degree	13 (26%)	7.582	0.023
Caring responsibility			
Yes	1 (2%)		
No	47 (94%)		
Prefer not to say	2 (4%)	2.212	0.697

Demographics

Table 1 shows the participants' demographics, which were predominantly female (74%) and white (78%), attended non-selective state schools (64%) before university, had at least one parent who attended university (74%), and had no caring responsibilities (94%).

No correlation was observed between gender, ethnicity, school attended (state school vs. independent school), caring responsibility, and students' decision to intercalate. A significant correlation was observed ($p = 0.023$) between parental university status and students' intercalation decisions. Students whose parents held university degrees were more likely to be currently intercalating or starting intercalation (85%) compared to those who did not (50%).

Financial impact and cost-benefit analysis of intercalation decisions

The chi-square test demonstrated a significant association ($p = 0.001$) between the cost-of-living crisis and the decision to intercalate. Students impacted by the cost-of-living crisis were significantly less likely to intercalate, with 81% of students deciding not to intercalate being impacted compared to 32% of students starting or currently intercalating. Additionally, students perceived that accruing another year of debt (76%) was the biggest disadvantage of intercalation.

The thematic analysis of the students who decided not to intercalate due to being affected by the cost-of-living crisis revealed the theme of financial burden, with the prominent codes being reduced student loans, increased debt, and living costs. In contrast, students who decided to intercalate cited effective financial strategies and support systems, such as being unaffected by the cost-of-living crisis and being well-supported by their parents (Table 2).

Navigating career benefits and policy influences in intercalation decisions

Aside from the cost of intercalation, students' decisions to intercalate were significantly influenced by their perception of the benefit to their future careers. The chi-square test demonstrated a significant difference ($p < 0.001$) between the perception of the benefit of intercalation towards a future career, with 100% of students who were starting or currently intercalating saying intercalation was beneficial to their future career, compared to 44% of non-intercalators. Furthermore, a significant association ($p = 0.014$) was found between the removal of additional points for intercalated degrees in UK foundation applications and students' intercalation decisions, with 63% of non-intercalators stating that removing points impacted their decision, compared to 26% of students starting or currently intercalating.

Table 2 Thematic analysis of the effect of financial pressures on intercalation decisions

Decision	Theme	Codes	Quotes
Non-intercalators	Financial constrains	Reduced student loan	*'Tight finances on NHS bursary and reduced student loan for 2 years after intercalation are not liveable as my family cannot afford to support me.'*
		Increased student debt	*'The rising costs mean I don't want to graduate with even more debt and have a larger graduate tax coming out of my earnings every month.*
		Family financial stress	*'Borrowing money from parents who don't earn a lot adds extra stress'*
		Living costs	*'I had to live at home because the cost of living was too high. I can't afford rent.'*
		Lack of funding for masters	*'Can't afford to pay as I wanted to study for a Masters '.*
		Losing an earning year	*'Intercalation would mean that I lost a year of salary'*
		Lack of institutional support	*'Funding is terrible, as a WP[widening participation] students, I feel that I am not provided with equal opportunities'*
Intercalators	Effective financial strategies and support system	Financially privileged	*'I am in the lucky position where I am relatively unaffected by the cost-of-living crisis'*
		Well-supported by parents	*'I am fortunate enough to be well supported by my parents'*
		Part-time job	*'I am working a part time job alongside intercalation to support my studies'*
		Scholarship	*'I was lucky to receive a very generous scholarship which helped my decision'*
		Financial planning in advance	*'I thought carefully and planned my funding a year in advance to make sure I could afford to intercalate'*

Table 3 Thematic analysis of the effect of career advantages on intercalation decisions

Decision	Themes	Codes	Quotes
Non-intercalators	Lack of perceived career advantage	Loss of extrinsic motivation	*'I think the additional points scored from intercalation was a big motivational factor for many.'*
		Loss of point incentives	*'Removal of points on all levels of medical training means intercalation doesn't count for as much on paper now.'*
		Cost-ineffective	*'I think there are cheaper, less time-consuming methods.'*
		Perceived unrecognition	*'I had considered it before but now it seems people are not being recognised by the system for the extra degree'*
		Limited career benefit	*'Intercalation is only beneficial if it is related to a future career specialty.'*
		Favouring post-graduate degrees	*'It is much more valuable to do a master's after graduation.'*
Intercalators	Perceived value outweighs points incentives	Longer-term career benefit	*'Intercalation no longer gets you extra points, but I believe in subsequent job applications, my intercalated degree will show evidence of academic curiosity and well-roundedness.'*
		Research skills and confidence	*'Intercalation has given me the knowledge and confidence to undertake other research opportunities in the future.'*
		Portfolio building	*'My intercalation supervisor has helped me gain posters and publications to help with my CV.'*
		Networking	*'Intercalation gave me the chance to meet academics/ professionals in a specific field.'*
		Providing alternate career avenues	*'If I decide not to be a doctor in the future, intercalated degree gives further qualifications in research to pursue careers in other areas.'*

The thematic analysis of the students who decided not to intercalate revealed the theme of lack of perceived career advantage, cited the loss of extrinsic motivation, point incentives, cost-ineffective, lack of recognition, limited career benefits, and preferring post-graduate degrees. In contrast, students who intercalated responded that the change in points did not affect their decision-making. They cited long-term career benefits, research skills and confidence development, and portfolio building (Table 3).

Impact of perceived advantages and disadvantages on intercalation decisions

Our study revealed a significant difference in perceptions of benefits between students who decided to intercalate and those who decided not to (Tables 4 and 5). Students who chose to intercalate were significantly more likely to believe that intercalation has the benefits of broadened knowledge ($p = 0.006$), gaining new skills ($p = 0.009$), and improved learning habits for future studies ($p = 0.010$). On the other hand, students who chose not to intercalate were significantly more likely to think that intercalation is only advantageous to students who want a clinical academic career ($p = 0.010$).

Discussion

This study illustrated the significant impact of the prevailing cost-of-living crisis on medical students' intercalation decisions and detailed the specific financial concerns facing students today, which is particularly relevant in the

Table 4 Perceived advantages of intercalation

Perceived benefit (number 'yes'/ total/ percentage)	NI* (/16)	SI* (/13)	CI* (/21)	All (/50)	*P* value
A break from MBChB course	13	11	19	43 (86%)	n-sig
Study a topic of interest in more depth	15	11	17	43 (86%)	n-sig
Gain new skills	9	13	18	40 (80%)	0.009
Broadens knowledge	8	13	17	38 (76%)	0.006
Experience in Research	10	10	17	37 (74%)	n-sig
Improves long term career prospects	9	10	18	37 (74%)	n-sig
Study a topic related to a career I have in mind	12	9	13	34 (68%)	n-sig
A chance to get a publication	10	10	14	34 (68%)	n-sig
Students get an extra summer holiday	6	9	13	28 (56%)	n-sig
Improves learning habits for future studies	2	6	13	21 (42%)	0.010

*NI– non-intercalators, SI – starting intercalation, CI - currently intercalating

Table 5 Perceived disadvantages of intercalation

Perceived disadvantages (number 'yes'/ total/ percentage)	NI* (/16)	SI* (/13)	CI* (/21)	All (/50)	*P* value
Another year of debt	15	10	13	38 (76%)	n-sig
Another year of study	13	11	10	34 (68%)	0.031
Taking a year out in the middle of the phase will be detrimental to my exam results at the end of the phase	10	8	9	27 (54%)	n-sig
Finish in a different year to my friends	8	11	7	26 (52%)	0.014
Stress of learning skills that are not directly/obviously applicable to medicine	4	4	4	12 (24%)	n-sig
It is only advantageous to students who want a clinical academic career	4	0	0	4 (8%)	0.010
More intense than medicine	0	0	4	4 (8%)	0.050

*NI – non-intercalators, SI – starting intercalation, CI – currently intercalating

current socio-economic climate. Furthermore, we have extended the intercalation literature by highlighting the equity and diversity issues faced by first-generation university students and those from socioeconomically disadvantaged backgrounds. Our study has also provided new empirical evidence of how recent policy changes in foundation programme applications affected student decisions surrounding intercalation. Previous studies have excluded non-intercalators due to low response rates; therefore, this study has added value by comparatively analysing the perceived advantages and disadvantages of intercalation between intercalating students and non-intercalating students. Furthermore, applying Vroom's expectancy theory as a theoretical lens provides a structured approach to understanding the motivational dynamics and deepens our analysis.

Expectancy

Consistent with Vroom's expectancy theory, the escalating cost-of-living crisis has significantly limited students' expectancy of successful intercalation. We found that a greater percentage of medical students cited financial constraints as the primary deterrent for intercalation than did those in previous studies [10, 24, 30, 31]. As the cost-of-living crisis prevails, medical students face increased financial burdens and expressed concerns regarding funding, student debt, living costs, family strain and the lack of institutional support. As a result, students who faced financial burdens increasingly opted against taking an intercalated year, prioritising immediate entry into the workforce to prevent additional student debt and losing a year of earnings as a doctor [10, 30].

Instrumentality

Additionally, our study has provided the data to support existing speculations in the literature [32] that removing points for intercalated degrees across all foundations and higher medical training selections in the UK significantly impacted students' decisions to intercalate. While this change aimed to widen academic opportunities, having an intercalated degree still provides a significant advantage, particularly for students aspiring to pursue competitive specialty training pathways [33]. According to Vroom, one's sense of control in the performance-to-reward process and the presence of performance-related policies are essential to instrumentality. Therefore, the lack of recognition of intercalated degrees in national medical training selection and the perceived lack of control in the 'performance-to-reward process' significantly reduce students' motivation to intercalate. Furthermore, the lack of instrumentality and perceived devaluation of intercalation's career advantage could make the additional financial commitment more difficult for students to justify, especially against a backdrop of existing financial pressures. This could discourage early engagement in research activities [32], and risk cultivating a future cadre of clinicians that lack academic rigour [34].

Valence

Valence, the third component of Vroom's Expectancy Theory, refers to the value individuals attach to the anticipated outcomes of their actions. In line with this, students who chose to intercalate recognised its long-term benefits beyond points or immediate rewards, echoing findings from the existing literature [35–39]. Students intercalate to demonstrate enthusiasm and commitment to prospective employers and achieve publications and presentations. Additionally, intercalation facilitates

networking and making connections that can benefit future speciality applications [10, 14, 24]. Conversely, students who decided not to intercalate perceived limited relevance to their future non-academic clinical careers. This contrasts with existing evidence, which suggests that intercalation cultivates general academic, clinical, and inter-professional skills, benefiting a broad range of students beyond mere benefits to academically focused career paths [14, 40–42]. This disparity between students' views may reflect a lack of comprehensive information available to students to inform their decisions [30].

Our findings revealed that students who are the first in their family to attend university were significantly less likely to intercalate. Students from socioeconomically disadvantaged backgrounds, in particular, highlighted a lack of institutional support as a key barrier to intercalation. Consistent with Vroom's theory, these students reported lower expectations of success (expectancy), reduced belief that intercalation would lead to desirable outcomes (instrumentality), and placed less value on those outcomes (valence), due to the multiple barriers they faced. These findings add to the literature on inequality in the clinical academic workforce [43]. Furthermore, variations in the opportunities and outcomes linked to intercalation may exacerbate differential attainment, as research experiences remain less accessible to students from disadvantaged backgrounds [33, 44]. The decline in intercalation, therefore, raises equality and diversity concerns in the pipeline of future clinical academics [45], which could undermine the foundation of clinical academia.

Implications

This study highlighted a pressing need to address the barriers to intercalation, as the decline in intercalation rates could have far-reaching consequences, including a decrease in the number of highly trained academic clinicians [46], diminished exposure to research [47], and a less diverse clinical workforce [33]. It is imperative for stakeholders to collaboratively address the multifaceted issues influencing students' decisions about intercalation. At the national level, increased funding opportunities and grants are needed to support equal opportunities and engagement with academia [48], particularly for students from the poorest backgrounds. At the local level, medical schools should consider how they can best support students keen to intercalate, while being mindful of institutional financial constraints, for example, by facilitating access to bursaries and assisting with scholarship applications. Educators should ensure that students have access to comprehensive information about the benefits of intercalation, not only for academic careers but also for broadening clinical and professional skills. Providing resources and hosting workshops that focus on the diverse benefits of intercalation can help students appreciate the long-term advantages of taking an intercalated year, helping them make more informed decisions and potentially increasing intercalation rates.

In the concerted effort to train future clinical academics, it is imperative to explore alternative avenues for students to engage in research and academic pursuits. Integrating research opportunities within the regular medical curriculum, such as through summer internships or elective periods dedicated to research, can provide a taste of research without significant financial or time commitments.

Future comparative studies across multiple institutions involving surveys and interviews of supervisors for intercalated degrees could provide insights into how various educational and financial policies impact students' decisions to intercalate and identify best practices that could be adopted more widely. Moreover, further research should help determine the barriers faced by students with widening participation and diverse backgrounds to develop targeted interventions to mitigate challenges. This could help create a more supportive and equitable environment for medical students considering intercalation and ensure that policies support the inclusion of students from all backgrounds in the clinical academic workforce.

Strengths and limitations

By combining the insights gleaned from quantitative and qualitative analysis, this is the first study in the UK to provide a rich and nuanced understanding of the factors that shape students' decisions regarding intercalation in the context of increased financial pressure and major UK foundation policy changes. Our study encountered a relatively low response rate from students at a single institution, and our sample consisted of a greater proportion of students currently intercalating, which could have introduced bias into the results and potentially limited the generalisability of our findings. However, the focus on the richness of qualitative data and the triangulation between quantitative and qualitative data enhance consequential validity. We acknowledge that our survey instrument was developed specifically for this study and has not been validated. Consequently, issues may be related to the phrasing of individual questions and respondents' interpretations. Therefore, we must acknowledge the possibility of interpretive bias in our qualitative analysis. However, despite this potential bias, we found high consistency between the quantitative and qualitative data, increasing our findings' empirical validity.

Conclusion

Our study provided new insights into the socio-economic, policy-related, and motivational differences among students that influence intercalation decisions. Intercalation is an essential avenue for nurturing the next generation of clinician-scientists adept at integrating scientific advancements into clinical practice. Preserving access to research opportunities is paramount in preventing further decline in our clinical academic pipeline. The decision to intercalate has always involved a complex cost-benefit analysis, weighing financial and time investments against potential academic and career advantages, particularly for students from diverse backgrounds. Further research and targeted interventions are imperative to preserve the future vitality and diversity of our clinical academic workforce.

Abbreviations

UK United Kingdom
NHS National Health Service

Supplementary Information

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Supplementary Material 1

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Author contributions

CS conceptualised the project. JL led the data analysis, with input from CR, OG, SC, JT, and CS. JL, OG, SC, and JT prepared the initial drafts for the manuscript, which were critically revised by CR and CS. JL coordinated revisions of the manuscript in preparation for its submission. All authors gave their approval for the final version to be published and agreed to be accountable for all aspects of the work.

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Data availability

The datasets generated and/or analysed during the current study are not publicly available due to privacy and ethical concerns, but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the latest version of the Declaration of Helsinki issued by the World Medical Association. The study was approved by the University of Sheffield Medical School Ethics Committee (Ref: 048087), and all participants provided voluntary, informed written consent to participate.

Consent for publication

All participants provided voluntary, informed written consent for the publication of all questionnaire responses.

Competing interests

CR is a Senior Editorial Board member of BMC Medical Education. The other authors declare that they have no competing interests.

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