Exploring the Interventional Radiology Academic Landscape in the UK: Insights from the Consultant Body

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Highlights

- Insights into interventional radiologists' (IR) academic opportunities reveal important barriers to conducting clinical research including lack of dedicated time, busy competing clinical duties, and lack of institutional investment.
- UK IR departments are essentially ill-equipped in both human and financial resources to support clinical research activities.
- Although perceived as critical in supporting research, only a minority of IR clinicians report official affiliations with academic institutions.

Abstract

Objective: This study aimed to investigate the current UK academic landscape within Interventional Radiology (IR), focusing on senior staff members, including consultants, senior trainees and post-certificate of completion of training (post-CCT) fellows.

Materials and Methods: A four-part survey was designed using Google Forms, targeting IR consultants and post-CCT fellows. Data was captured on participants' research experience, publication records, overall academic background, and departmental resources for clinical research. The survey was distributed through the British Society of Interventional Radiology (BSIR) email newsletter as well as various social media platforms. Data collection spanned six weeks, with regular reminders to maximise participation. Descriptive statistics were employed for data analysis using SPSS (for Mac).

Results: The survery was sent to 1031 BSIR members, with a total of 84 participants, predominantly consultants, responded. The average clinical experience as a consultant was 11 years. Just under a third reported having University academic affiliations. Publication records were varied, with exactly half having published between 1-10 articles. Departmental infrastructure showed diverse research activities. Only 19 out of 84 participants support from their hospitals for RCTs, citing barriers such as clinical duties, lack of time, and funding constraints.

Conclusion: The findings underscore challenges within IR academia, including limited academic opportunities and barriers to conducting high-quality clinical research. Addressing these challenges requires support and investment to enhance infrastructure and resources to foster a more robust research environment within IR departments.

Introduction

A central pillar underpinning the survival and advancement of every medical specialty is rigorous scientific evidence-based clinical research. The aim of research is not only to deliver high level evidence for establishing pioneering new methods for diagnosis and treatment, but also to provide a platform upon which practices can be scrutinised to improve patient care. Interventional Radiology (IR) has evolved to become an indispensable clinical entity in almost every secondary care institution in the United Kingdom (UK) (1), yet continues to suffer from chronic underfunding, understaffing and lack of organised workforce planning (2, 3). Unfortunately, the same holds true for its counterpart academic landscape, with report limited funding and other significant barriers to delivering high quality research (4, 5). A recent UK Health Research Analysis has revealed that over £5 billion was spent on health and biomedical research awards in 2022 with spending on cardiovascular, stroke and cancer care specifically, amounting to over 25% of this (6). While IR plays a critical role in these health areas, a proportionate funding and translation of this to trials pertaining to IR specifically are far lower than one might anticipate even despite year-on-year growth of the speciality (7). Indeed, recent studies have highlighted the limited academic opportunities available to radiology registrars as well as the barriers they face in capitalising on those opportunities when they do arise (4). The aim of this study was to explore the current UK landscape of clinical research in IR, with emphasis on senior IR staff members, specifically consultants and senior or post-CCT fellows.

Materials and Methods

A four-part survey was created on Google forms online, to help capture data on participants' prior research experience, publication records, and overall academic background. The survey was targeted to IR consultants, post-CCT fellows and senior trainees (defined as grade of Speciality Trainee Year 6 (ST6) and above) and was distributed using a link attached to the

British Society of Interventional Radiology (BSIR) weekly newsletter and via advertising on various social media platforms. Google forms was chosen as the survey platform due to its accessibility, ease of use, and ability to securely collect and manage responses. Data collection occurred over a period of six weeks, during which 1031 participants were invited to complete the survey. To maximize response rates, regular reminders were sent out via email to encourage participation. Questions within the survey were designed to capture information regarding prior involvement in research activities, publication history, and overall familiarity with applying and receiving funding for conducting various study types including randomised controlled trials (RCT). Questions also aimed to assess departmental infrastructure and any support systems in place to facilitate research processes, including access to clinical trials units. Data was analysed using descriptive statistics, including frequencies, percentages, means, and standard deviations using SPSS (for Mac).

Results

A total of 84 interventional radiologists responded out of 1031 members surveyed. Seventy two were consultants, of whom 14 (16.7%) were heads of their respective departments (Table 1). Most participants reported working at a university teaching hospital or a regional teaching hospital (63 and 14, respectively). The average years of clinical practice as consultant was 11.3 years (SD of 8.5). Approximately a third reported having a University academic affiliation while 65 participants reported only having a clinical contract with no concurrent honorary or academic university contracts. Only 2 participants were solely employed by a university.

Table 1: Demographics of survey participants

	N =	%
Number of participants	84	
Current setup of practice		
- University teaching hospital	63	75.0
- Non-teaching regional hospital	5	6.0
- Teaching regional hospital (non-University)	14	16.7
- Own private practice	1	1.2
- Other	1	1.2
Current level of practice		
- Head of department	14	16.7
- Consultant	58	69.0
- Senior trainee or post-CCT fellow	10	11.9
- Other	2	2.4
Years post-training completion	μ = 11.3 (SD=8.5)	
Employed by:		
- Clinical department (clinical contract) with Honorary contract by University	14	16.7
- Clinical department only (clinical contract)	65	77.4
- Joint university & clinical contract	3	3.6
- University only (academic contract)	2	2.4
Academic position (professor, reader, lecturer)	25	29.8

In terms of prior research experience and qualifications, 15 participants (17.9%) reported having some form of higher degree, with MSc (n=14,16.7%), MRes (n=3, 3.6%) and PhD or MD (n=11, 13.1%) as the highest reported degrees held (Table 2). Publication records were evenly distributed with exactly half of the participants having published articles in peer-reviewed journals between 1 and 10 times. A small minority of 11 consultants (13.1%) have published over 50 articles. These consultants reported sitting on editorial boards (36.9%) and/or were peer-reviewers in journals (51.2%). 17 members reported being members of international research collaboratives (20.2%).

Table 2: Academic background experience

	N =	%
Higher degree holder	15	17.9
Highest degree held		
- MSc	14	16.7
- PhD	4	4.8
- MD	7	8.3
- MRes	3	3.6
Number of peer-reviewed articles		
- None	5	6.0
- 1-5	25	29.8
- 6-10	17	20.2
- 11-20	12	14.3
- 20-50	14	16.7
- 51-100	9	10.7
- >100	2	2.4
Number of peer-reviewed articles as senior author		
- None	11	13.1
- 1-5	44	52.4
- 6-10	12	14.3
- 11-20	9	10.7
- 20-50	7	8.3
- 51-100	1	1.2
Dedicated research time in contract	21	25
Dedicated research PA time	30	35.7
Formal training in research	20	23.8
Part of editorial boards	31	36.9
Reviewer in peer-reviewed journals	43	51.2
Member of any research funding committees	8	9.5
Previous or current research grant holders	24	28.6
Leading research groups	18	21.4
Recruited a patient in a RCT in the last 12 months	26	31
Ever recruited in RCT	50	59.5
Recruited a patient in a non-RCT in the last 12 month	29	34.5
Ever recruited in non-RCT	50	59.5
Believe research benefits patient care	83	98.8
Member of international research collaborative	17	20.2

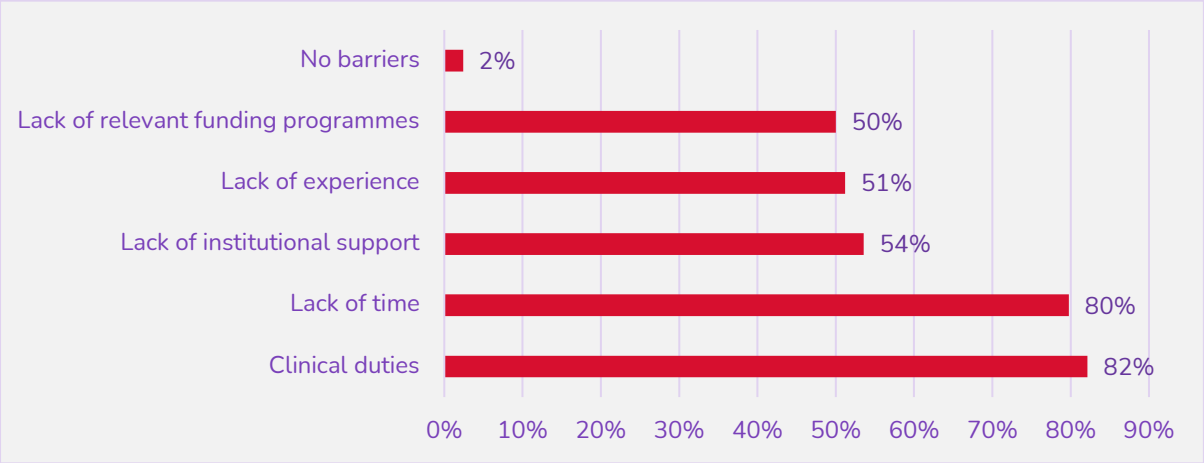
Departmental infrastructure varied widely with 77.4% (n=65) of participants reporting that their department were actively conducting research (Table 3) at the time of survey. 46.4% reported as conducting RCTs and for which 40.5% (18.8% overall) reported having research nurses in the department. Regular departmental research meetings (n=18) and full-time research fellows or PhD students (n=19) were only reported in 21.4% and 22.6% of responses, respectively. Only a small minority (n=19, 22.6%) felt there was sufficient institutional investment and infrastructure to support RCTs. Up to a quarter of participants reported their department currently holding public or industry funding for research. Eighteen participants (21.4%) reported leading research groups with a minority of 26 (31.0%) having recruited a patient in an RCT in the last 12 months.

In exploring participants' perceptions of barriers to research (Figure 1) a large majority reported the interrelated factors of 'clinical duties' (82.1%) and 'lack of time' (79.8%) as the main obstacles to research followed by lack of experience (51.2%), lack of funding (50.0%) and lack of institutional support (53.6%). A small minority of just two participants (2.4%) felt that there were no barriers to research.

Table 3: Summary of IR Departmental clinical research activities, funding and

	N of IRs =	%
ACTIVITIES		
Working in Department undertaking research activities at present	65	77.4%
Working in Department actively recruiting in RCT at present	39	46.4%
Department currently taking part in any international studies	39	46.4%
FUNDING		
Previous or current industry or public funding for research	21	25.0%
Department currently holding any research/grant funding	31	36.9%
Funding per patient/recruit an incentive for participation in research	65	77.4%
INFRASTRUCTURE		
Access to research nurses in department	34	40.5%
Sufficient support and infrastructure for performing RCTs and clinical studies	19	22.6%
Regular research meeting in department	18	21.4%
Research fellows or PhD students (or equivalent) in department	19	22.6%

Figure 1: Barriers to research funding as perceived by survey participants.



Discussion

This paper adds to the growing evidence of the suboptimal academic landscape that underpins IR academia in the UK, specifically with insights from senior interventional radiologists who form the backbone of IR research activity. In any clinical speciality, combining clinical practice with high-quality clinical research is typically intellectually demanding, requires a great deal of motivation and dedication of time, yet is essential for improved patient outcomes in the future. IR is no exception, and whilst an academic clinical career may be potentially career-changing not every clinician in the UK has the resources, time, and appropriate infrastructure to pursue it, which is highlighted by our survey results. While there is evidence of some job planned time dedicated to research in a small proportion of participants, this will typically have been sought by the interventionalists independently of the clinical institute. Further, most IRs who pursue research, do so in their non-job planned time with the help of junior colleagues, who in turn also do it outside of their normal clinical job. In addition to improving patient outcomes and driving advances in IR, other drivers may include genuine inquisitiveness, pursuit of intellectual freedom, introduction in more variation in day-to-day activities, career development and feeling of accomplishment. Clinical research opportunities may also be accompanied by funding from industry sponsors such as medical device or pharmaceutical companies wishing to promote new applications. In terms of resources, only a small proportion of participants confirm previous or current public funding for research and often these appear to be sporadic and opportunistic. Concurrent honorary contracts with universities would appear to represent a 'happy medium' for IR's who do not have the time for a formal combined academic clinician role, and this describes the majority of surveyed participants. Only four (4.8%) participants in the study were PhD-holders, which is perhaps lower than may have been anticipated, especially given the likely self-selecting biases and that in any case, around 2% of the general population hold a PhD.

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The current academic profile of the IR consultant body, as captured in this survey, is a product of training pathways, research opportunities and job plans in the NHS over the last two decades. This is unlikely to change in the decades to come in the absence of some modifications not only in recruitment practices but in IR workforce planning more broadly. Formal training pathways combining clinical practice with academia are currently limited across many clinical specialities, and notably so in IR. To illustrate this, in 2023 there were just 8 academic clinical fellowships (ACF) in Clinical Radiology for a total of 358 new STs, equating to 2% of the intake that year. This compares with a 4% ACF ratio for Cardiology in the same year (19). Furthermore, these research posts are often classified as 'Radiology', 'Imaging' or 'Digital' and are tied to strict National institute of health research (NIHR) themes, which are rarely directly associated to IR, often precluding IR research altogether. Although not the only pathway into academia, the ACF guarantees time and funding for a trainee to build the foundations for higher academic qualifications such as a PhD and MD, with a view to obtaining clinical lectureships and relevant academic affiliations with universities. To put this in other words, in the current national recruitment programme for Clinical Radiology which is currently the gateway to IR, only 2% of incoming STs are given the opportunity to pursue academic or hybrid careers and build the skills and knowledge in a protected framework. Whilst some of the consultants responding were prior ACFs, of the surveyed fellows, none were ACF post holders, and none reported protected research time during training. With competency-based training now constituting a basic requirement for training completion, should there not be evolution of the academic and research requirement during training? And in doing so, there should be protected time to achieve this competency both during training and following CCT completion, regardless of the academic status.

Close to 80% of surveyed IRs report ongoing research in their department and 47% were recruiting for RCTs. Yet only 36% of participants have dedicated PA time for this, only 34% have access to research personnel such as research nurses and only 23% have designated

research fellows. That is not to say that all IR doctors and departments need these arrangements, but of those departments performing research, one would expect at least some of the relevant infrastructure should exist to support these activities. With research across the country repeatedly demonstrating increasing volume of work in IR departments (2) and with only a disproportionate increase in staffing (3), the identified barriers to research (lack of time, experience, and funding) are only expected to get worse if the issue is not addressed head-on.

Limitations of the current study are the low response rate of 84 out of 1031 (8%). There is also likely to be an inherent bias in responders as they are likely to be involved in research, or have a vested interest in completing the survey, and thus over-represent research activity per capita. The low response rate may also serve as a signal from most IRs in this country that research is not currently seen as a priority in their departments with most IRs stretched to their limits to meet their ever-increasing clinical duties.

Whilst overall the results of the survey sound disparaging for the future of academic IR, the story is not entirely bleak. Despite clear lack of resource and investment as highlighted, there have been many successes in academic IR in the UK over the last two decades, including several large single and multicentre case series and RCTs. These have been largely driven by the hard-work and determination of academic IR consultants, their teams and collaborators and highly likely in unpaid hours.

It seems clear that investment in protected time for research for both IR trainees and consultants alike would be an important step to secure future academic success of IR in the interests of patient outcomes, and this has been highlighted by other IR surveys (4). However, the funding source remains unclear; the little protected research time IR does currently have is via disparate sources and currently there is no central UK academic funding stream specifically for IR. Until such funding and investments are in place, academic IR will likely survive through gritted teeth of the few academic IRs with support from industrial partners

and IR societies such as BSIR and IOUK, multicentre collaborations and trainee-lead academic initiatives.

Conclusion:

The current status of academic IR in the UK is sub-optimal due to lack of investment, dedicated research infrastructure and integrated research time into the typical trainee or consultant job plan. To secure funding and enable high quality and consistent research in IR we should encourage hybrid, clinic-academic leadership with strong ties to academic institutions. This requires academic leadership by IRs and other academic clinicians who have undergone the relevant training, with the qualifications and experience to steer IR departments to the right direction not only clinically but academically. It would also be important for IRs to have access to the infrastructure which naturally fosters IR research including access to dedicated research students (MD/PhD/DPhil) and accessible clinical trials units. The current survey reiterates ongoing limitations and barriers to achieving this in the UK, part of the reason being chronic underfunding of the specialty in general. This is compounded by the coupling of IR with Clinical Radiology, and the lack of recognition of IR as a stand-alone entity deserving dedicated funding specifically for academia. Research active departments provide better clinical care, and IR needs research into the rapidly expanding number of procedures (8), enabling high quality generalizable data elucidating safety and effectiveness.

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Appendix:

Appendix 1: List of questions asked in the survey

Do you consent to participate in this survey?
Are you happy for us to store your email and contact you in the future about this survey? All information will be stored securely in a safe server and will never be shared. Your answers, including email address and name, will not be shared at any point with anyone in your department or place of work.
What is your current level of practice?
How many years have you practiced following completion of your training (if you have already completed training) as an independent practitioner?
Have you got any dedicated research time in your current job plan/contract ?
Does your department have any dedicated research PA time?
Are you employed by a University or a Clinical Department at present (your main employer)
Do you have an academic affiliation
Have you undertaken any formal training in research (e.g. an MSc or other course/degree)
Do you hold a higher degree (e.g. PhD) ?
If yes, which is your highest degree?
How many peer-reviewed journal research articles have you published?
How many peer-reviewed research articles have you published as a lead or senior author?
Are you or have you been a member of a peer-reviewed journal editorial board?
Do you regularly partake in the reviewing of peer reviewed journals?
Are you a member of any research funding committees in your country or internationally?
Have you personally received any funding to deliver research in the past (e.g. research grant)?
Are you currently leading a research group?
Have you recruited a patient in a randomised controlled trial in the last 12 months?
Have you recruited a patient in a non-randomised controlled trial in the last 12 months?
Have you ever recruited a patient in a randomised controlled trial?
Have you ever recruited a patient in a non-randomised study?
Do you believe research benefits patient care?
Are you currently a member of any international research collaborative?
Is your department undertaking any research activities at present?
Is your department actively recruiting in any randomised controlled trials at present?
Is your department currently taking part in any international studies?

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Have you personally previously held or currently hold any industry or public funding for research?
Does your department currently hold any research/grant funding (as a lead) in order to deliver a study?
Which do you feel are the main barriers in order to receive/apply for dedicated vascular research funding in your own experience so far? (please feel free to use the "other" & free text option to elaborate).
In your own words, can you describe the main barriers that you or your department have faced/are facing regarding research funding?
In your own words, what could be done in order to improve research funding in your department?
Would funding per patient/recruit paid to you or your institution be an incentive for participation in research?
Have you got access to research nurses in your department?
If not, would this help you deliver research more efficiently?
Do you feel there is sufficient support and infrastructure for performing RCTs and clinical studies in your department?
Is there a regular research meeting in your department?
Are there any research fellows or PhD students (or equivalent) in your department?
If you were to choose the one thing that would help you deliver research more efficiently in your department, which would that be?