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“Luck of the draw really”: a qualitative exploration of Australian trainee doctors’ experiences of mandatory research

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Abstract

Background Many medical trainees, prior to achieving specialist status, are required to complete a mandatory research project, the usefulness of which has been debated. The aim of this study was to gain an in-depth understanding of trainees’ experiences and satisfaction of conducting such research projects in Australia.

Methods A qualitative descriptive approach was used. Semi-structured interviews with trainees were undertaken between May 2021 and June 2022. Australian medical trainees who had completed a research project as part of specialty training within the past five years were invited to participate. The purposive sample was drawn from participants in a survey on the same topic who had indicated interest in participating in an interview. Interviews explored trainees’ overall experience of and satisfaction with conducting research projects, as well as their perceptions of research training, support, barriers, enablers, and perceived benefits. Interviews were transcribed verbatim and thematically analysed.

Results Sixteen medical doctors from seven medical colleges were interviewed. Trainee experience and satisfaction was highly variable between participants and was shaped by four factors: 1) trainees entered their specialty training with their own perspectives on the value and purpose of the research project, informed by their previous experiences with research and perceived importance of research in their planned career path; 2) in conducting the project, enablers including protected time, supervisor support and institutional structures, were vital to shaping their experience; 3) trainees’ access to these enablers was variable, mediated by a combination of luck, and the trainees’ own drive and research skill; and 4) project outcomes, in terms of research merit, learning, career benefits and impacts on patient care.

Conclusions Trainee experiences of doing research were mixed, with positive experiences often attributed to chance rather than an intentionally structured learning experience. We believe alternatives to mandatory trainee research projects must be explored, including recognising other forms of research learning activities, and directing scarce resources to supporting the few trainees who plan to pursue clinician researcher careers.

Keywords Medical training, Trainee, Research requirements, Scholarly activity, Education

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Background

Engaging clinicians in research is a cornerstone of quality healthcare and evidence-based practice. Professional colleges in many countries have fostered such engagement through the integration of research-related competencies into their training standards, usually by requiring completion of a research project during residency [1–4]. However, the value of requiring college trainees to lead projects to gain specialist clinical qualifications has long been debated [5–8]. Key medical academics have suggested that in health service contexts, research should only be led by those few who plan to engage in a clinician researcher career, while the majority of clinicians should learn to participate in research, and effectively utilize research findings [9]. In Australia, specialty training is led by specialty specific colleges, most of which mandate completion of a scholarly project which, for most colleges is a research project, but for some can also be a quality improvement initiative [4].

Previous research has identified problems with the current system of mandatory research. Our previous investigation showed that Australian college research project requirements, similar to those of specialty training programs internationally [10], frequently specify the trainee must lead or carry out most of the project, but often do not stipulate requirements regarding the quality of supervision or the quality of the research [4]. Previous international research has also reported significant barriers to trainees undertaking research, predominantly lack of protected time in light of other training demands, but also lack of appropriate mentorship, funding, structural supports, and interest from trainees and faculty [11–19]. The intended goals of mandated research projects are important- to advance research, support evidence-based practice, encourage critical thinking and stimulate a culture of lifelong learning [2, 20]. However, many clinicians do not develop sufficient research skills during specialty training [21]. Hence the current system is at risk of failing to meet training goals and provide a satisfying learning experience for trainees.

While the primary goal of mandated research projects is to educate future clinicians in research methods, there is also an obligation to ensure the research produced by trainees is valid, potentially useful [22], and reflective of the considerable time invested in completing a research project. Substantial input is required from not just the trainee, but often their supervisor, co-investigators, ethics committee members, governance administrators, health data custodians, statisticians, patients and other types of participants. Some commentators have suggested the pressure to produce research outputs during training, and the considerable barriers to conducting this research, promotes wasteful research practices [5,

6, 10, 23, 24]. These may involve abandoning projects midway, producing low-quality research, failing to make the results of research suitably available, or even engaging in research misconduct [14, 25–29]. Additionally, some studies, mostly in surgical fields, have found that time spent in research training can interfere with the acquisition of clinical skills [30], or the volume of clinical activity trainees can undertake. [31] In an increasingly constrained healthcare environment, it is vital that trainee time spent away from clinical duties is spent responsibly in terms of both meeting curriculum goals and producing quality research.

Ensuring that trainees have a constructive and satisfying research experience is critical. Medical competency frameworks place importance on the scholar role for both gaining specialty licensure, and ongoing professional development [2, 20]. However negative early experiences of research can deter clinicians from future research engagement entirely [14, 32, 33]. Previous research on trainees' personal experiences of conducting research projects has almost exclusively comprised quantitative surveys, with minimal study outside North America [11–19]. Thus, a wider understanding of trainee experiences is important in gauging the effectiveness and relevance of mandated projects in medical training and identifying areas for improvement.

Accordingly, we aimed to explore the research expectations and training set by specialist medical colleges in Australia and New Zealand as part of a mixed methods body of work entitled Enhancing the Research Development of Medical Specialty Trainees (ENHANCE). A survey component, reported elsewhere [29], explored how trainees undertook mandatory projects, their views regarding the curriculum, and the quality of their research outputs. The present study aims to gain an in-depth understanding of trainees' experiences of conducting research projects as part of medical specialty training.

Methods

Study design

This study used a qualitative descriptive design, applying a theory-informed inductive approach [34]. We conducted semi-structured interviews with current and recently graduated Australian medical trainees. An interpretivist paradigm was applied, which considers trainee experiences to be subjective and influenced by context [35]. The Standards for Reporting Qualitative Research (SRQR) guidelines were used to guide reporting [36].

Recruitment and sampling

The study sample was primarily drawn from participants in the ENHANCE survey study [29] who consented to be contacted for an interview and met eligibility criteria of

having completed a research project as part of their specialty training, either as a current trainee or a specialist who had completed their training within the past 5 years. Those who completed their project as part of a higher degree were excluded, as their experience was expected to differ significantly from most trainees.

We used purposive and snowball sampling to select participants from a variety of medical colleges. Survey recruitment utilized the existing communication channels (website, newsletter and direct email) of 11 Australian and New Zealand medical colleges. Of the 372 participants who completed the ENHANCE survey, 33 expressed interest in participating in an interview. This approach was supplemented by snowball sampling, in which study information was shared through avenues such as college meetings, social media and email chains. Potential participants who expressed interest either in the survey or by emailing investigators after learning about the study elsewhere were emailed up to three occasions to arrange an interview time. Recruitment was ceased when all available participants had been interviewed.

Data collection and analysis

Two authors (PS, CB) developed a draft interview guide (Supplementary file 1) informed by relevant literature and conceptual frameworks of research learning by trainees and research waste [4, 32, 37–40]. This draft was reviewed by the research team and underwent several rounds of feedback. Questions included in the final interview guide explored the overall experience of conducting research projects, research training, support, experiences of barriers and enablers, and perceived benefits for their future careers and patient care.

Interviews were conducted via videoconference by a single, non-doctor author (JH) with prior experience in qualitative interviewing but no prior involvement in college research projects. The average length of each interview was 34 min. All interviews were recorded on Zoom videoconferencing software [41], transcribed verbatim using Otter.ai software [42], and checked, corrected, and anonymized by a single author (JH). The data were then analysed thematically [43] by five members of the research team (JH, CB, PS, RL, CN). Inductive thematic analysis followed six steps: 1. familiarisation with the data, 2. generating initial codes, 3. generating themes; 4. reviewing potential themes, 5. defining and naming themes and 6. producing the report [43]. Each researcher initially coded three transcripts and discussed key themes, after which a single author (JH) coded all transcripts using NVivo software [44]. A summary of the preliminary findings was presented to all team members and final themes were discussed and refined.

Reflexivity

As a team of 11 authors, including four allied health professionals and seven doctors representing seven different medical specialties, we approached this research with a range of experiences and expertise. The team included experts in qualitative research, medical education, clinical research, and research waste. All authors had experience in research, and an appreciation of the importance of research competencies in medical training. Ongoing discussions throughout the research process ensured a balanced methodological and analytical approach.

Results

Participants

Of the 39 doctors who expressed interest in participating in an interview, 20 did not respond to follow-up invitation emails, and 3 were ineligible. Although reasons for nonparticipation were not collected, the study took place during May 2021 to June 2022, hence the impact of the COVID-19 pandemic on workload and personal demands may have been a factor. Sixteen medical doctors participated in interviews; fourteen were recruited directly from ENHANCE survey participants and two were recruited via snowballing.

Most participants were male (12 of 16), and half were working as specialists, while the other half were current trainees. They represented seven different medical colleges, with two participants belonging to two different colleges (Table 1). All participants completed their training in Australia (although New Zealand doctors were also eligible to participate, none did). Four participants

Table 1 Participant details

Participant details (n = 16)	Participants (n = 16)
Employment level	
Consultant	8
Trainee	8
Gender	
Male	12
Female	4
College ^a	
Royal Australasian College of Surgeons	3
College of Intensive Care Medicine	3
Royal College of Pathologists of Australasia	1
Australian and New Zealand College of Anaesthetists	2
Royal Australian College of General Practitioners	2
Royal Australasian College of Physicians	3
Royal Australian and New Zealand College of Psychiatrists	3

^a 2 participants belonged to two different Colleges (dual trainees)

had gone on to start a higher degree in research (PhD or Master’s) after completing their research project, and one participant had a PhD prior to becoming a medical doctor but was still required to conduct a research project. All participants reported some research exposure before commencing their project, ranging from completing research-related coursework in medical school with no practical experience, to working as an academic and supervising multiple PhD students.

Identified themes

Five main themes revealed how trainees’ experiences of research projects were formed, as displayed in a thematic map in Fig. 1. First, trainees entered their specialty training with their own perspectives on the value and purpose

of the research project, often informed by previous experiences with research and perceived importance of research in their planned career path. Second, as trainees conducted the project, access to protected time, supervisor support and institutional research infrastructure were considered important enablers to project success. Third, trainees’ access to these enablers was mediated by a combination of luck, and the trainees’ own drive and research skill. Fourth, perceptions were influenced by project outcomes in terms of research achievement, learning, career benefits and impacts on patient care. Lastly, each of these themes contributed to trainees’ overall perception of and satisfaction with their research project experience, which was highly variable. These themes are discussed in further detail below, with illustrative participant quotes.

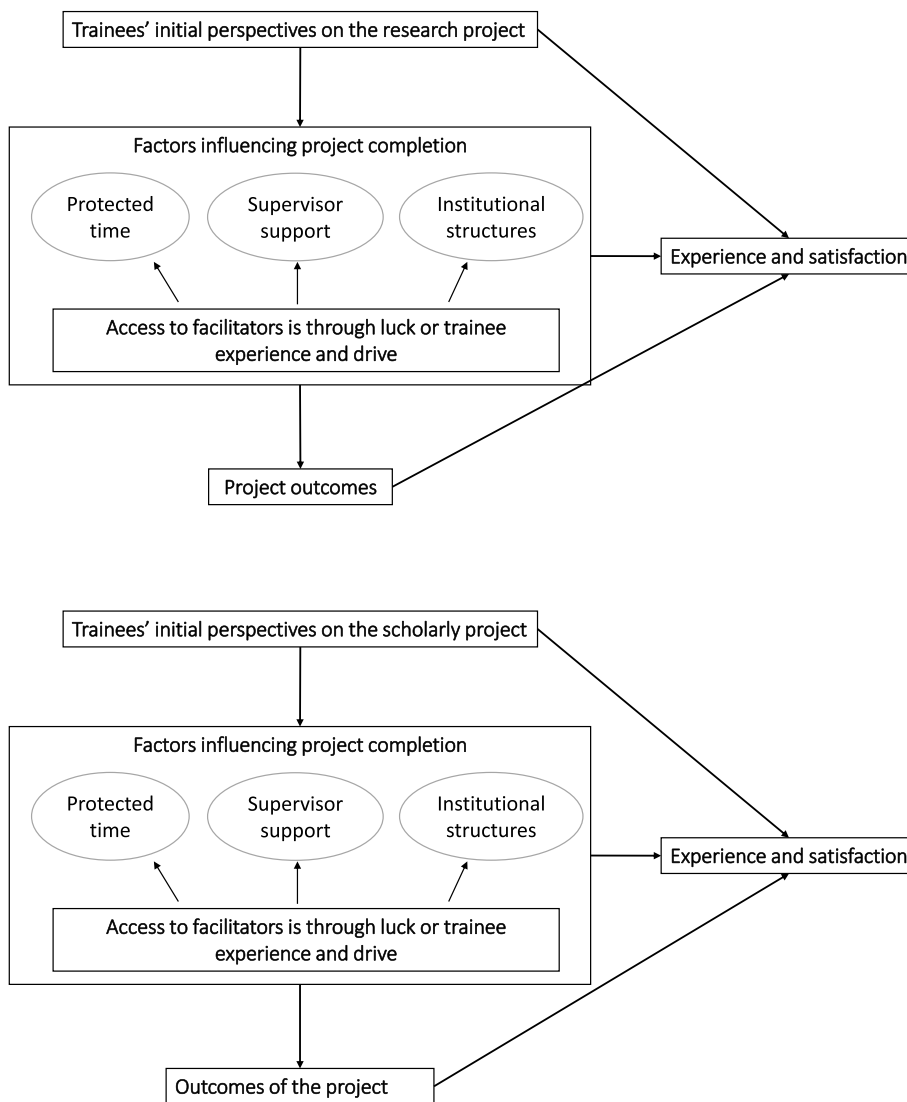


Fig. 1 Overview of themes

Trainees' initial perceptions of the research project

Trainees entered their specialty training with diverse understandings of the purpose and value of the research project, previously shaped by a combination of past experiences of research and their desired career path. Many participants saw the project as simply a mandatory requirement that trainees needed to fulfill, likening it to a “tick box” (P14) or “jump through hoops” (P5) activity, rather than an opportunity to develop their research capabilities. This opinion was more common among those who did not think research was likely to be a major part of their future careers, believing the project to be “a waste of time” (P5). This perception led some trainees to seek the easiest route for completing their project. Some participants were concerned that this approach fostered low-quality research. A few participants who already had significant research experience (e.g. PhD) prior to specialty training expressed frustration that their prior experience was often not recognised by the College as it did not fit the rigid College research project requirements; “Frankly, I think it was kind of naïve and silly of them to request that I continue with a project like they need to tick the box for research in their fellows. I’ve got probably 20 years research experience.” (P12) However, other participants interested in research or who had plans for research to be part of their career placed more value on the project, with some deliberately choosing more complex projects to build their research experience and skills.

Factors influencing project completion

Three factors were deemed important to the successful completion of the research project, and resulting trainee experience and satisfaction: protected time, supervisory support, and institutional structures.

The first factor was access to protected time to complete the project, although few participants reported receiving it. For most, substantial amount of time outside of work was required to complete the project, further compounded by competing training demands, personal commitments, and participants underestimating the time and effort required to complete the project at the outset.

The second was the importance of having a research-skilled supervisor who was accessible. Most participants felt well-supported and encouraged to complete their project by their supervisor, but where this was absent, trainees struggled, especially those with no prior research experience to fall back on. Some participants found their supervisor lacked adequate research experience to effectively guide them; “It’s the blind leading the blind” (P5), while others reported a general lack of interest and involvement; “He [supervisor] mostly left me to my own devices” (P11). Even those reporting good supervision experiences noted their supervisors’ clinical demands left

them little time for research supervision, leading trainees to rely more on their own knowledge and informal resources (e.g. YouTube). Participants felt that helping identify a project topic was an important supervisor role, and valued when supervisors were able to guide them towards topics that were interesting, clinically relevant, and of a manageable scope; “Because [supervisor] herself...has lots of experience in research it wasn’t too difficult to come up with a project” (P2).

The third factor was institutional structures, pertaining to both the trainees’ college and the health service in which they worked. Trainees perceived a misalignment between structures and processes inherent in clinical training and those enabling completion of research projects. For example, many training programs required trainees to regularly rotate between hospitals or health services, posing difficulty for many research projects which needed to be performed within one service; “There is a requirement for rotational training...[trainees] move on, and then it becomes very difficult because it’s beyond just sort of access to supervisor. It’s also things like, research governance, particularly, and access to data” (P6). Obtaining necessary but time-consuming ethics and governance approvals to access local clinical data during a time-limited placement within one health service was challenging; “ethics takes a year” (P15). Some trainees instead intentionally chose “portable” (P6) projects, like literature reviews, while others benefitted from joining clinical teams with extensive research programs and pre-established approvals and data access processes.

Institutional research culture and supports were also important for project completion. Participants able to be part of a team with a strong research culture (which they felt was the exception rather than the rule for trainees) reported benefits such as access to research-experienced supervisors, learning alongside other trainees, and access to research support staff, notably librarians and statisticians; “I was very lucky that the organization that I was working for...is quite a well-established clinical and research centre.... [I] did have access to a statistician, which was really helpful” (P14). The absence of such a supportive culture impeded project completion; “If you’re unlucky enough to be in a small department, which doesn’t care about research, then that’s almost like game over for your aspirations and that affects your ongoing practice” (P4).

Structured support from colleges, in the form of paid protected time and high-quality supervision, was only identified by general practitioner trainees, who emphasised the importance to their research experience. Other colleges, and health services where trainees were placed, provided some resources, such as workshops and online content, although some trainees

were unaware of their existence during their project, and others felt they did not fully translate into acquisition of practical skills.

Access to enablers is through luck or trainee experience and drive

Participants felt their access to the supports mentioned above was mediated by a combination of “*luck of the draw*” (P7), and also their own research experience and personal drive to pursue research activity. Many participants felt access to experienced supervisors, biostatisticians, data, desk space, and time was usually driven by luck; “*A lot of it really just comes down to dumb luck. You have to be at the right place at the right time*” (P1). While many participants reported mostly positive experiences, they were aware of “*unlucky*” colleagues with more challenging experiences; “*I was fairly lucky that things worked out really nicely with my supervisor. You know, I’ve had other colleagues who have... been unable to complete projects and had supervisors that are unavailable, and all sorts of other things*” (P6).

However, participants also recognised that individual attributes such as having prior research experience, strong interest in research, and motivation contributed to positive experiences and successful project completion; “*I’m not sure that if someone else going through that process would feel the same way. Because I was highly motivated myself...So, I suppose it all depends on the person*” (P4). Some participants, usually with more research experience, were able to carefully plan their project to make it achievable and sustainable (e.g. use a method they were already familiar with); “*I was fairly careful in selecting something that, you know, that I knew I could accomplish...in the timeframe that I needed to finish it*” (P6).

Lack of access to facilitating factors not only predisposed to a poor research experience but could also engender poor research practices, such as using a personal device to store patient data (P9), learning data analysis from YouTube (P2), using a “*torrented version of a data analysis tool*” (P16) and choosing infeasible project topics; “*[a supervisor] could easily have steered me off this [idea]”* (P7).

Participant 14 summed up the balance between luck and individual motivation and planning; “*I often look back [and] wonder, if I wasn’t at this exact place, with this supervisor, I possibly wouldn’t have been where I am now. But I guess I also actively applied for and was looking for a role in an organization that had the research as well as a clinical focus. For the reason that I did have an interest in research.*”

Project outcomes

All participants reported a sense of accomplishment in publishing or presenting their research, both in terms of fulfilling college requirements and furthering their own personal development. Many also viewed the experience as useful for general exposure to the research process and acquiring some new research-related skills and knowledge (e.g., submitting an ethics application, conducting a certain type of analysis, engaging in academic writing), but often felt these were somewhat limited or project-specific; “*I learned a few new skills, you know, nothing outstanding*” (P6); “*I’ve learned some things from a skills point of view. But as I said, because I wouldn’t do the project the same way again, I don’t feel like actually, I’ve got skills I can apply to a new project*” (P9). However, many participants felt they gained a better appreciation of the importance of finding relevant literature for clinical care and an improved ability to critically appraise research papers; “*I think that’s it’s good to help understand the levels of evidence available, and the quality that’s out there to help you judge the evidence that you read better, and then make better decisions for your patients based on that*” (P11).

Participants reported the immediate benefits of the research project to their clinical careers were limited, consisting mainly of providing a point of differentiation in interviews for consultant appointments and networking opportunities. For the subset of participants who were pursuing, or planned to pursue, research careers, they felt the project helped build their track record and skills. Participants expressed mixed feelings regarding whether doing the project gave them enough skills and knowledge to supervise research projects of future trainees; “*[As a] consultant, I potentially will have to supervise other registrars in their research. And I would say that I don’t really feel prepared for that*” (P8).

Most participants were uncertain about the impact of their research on health services and patient care. Some perceived limited impact due to the small scale of their projects or its confinement to their own clinical care; “*I think the first one [article] is interesting and is part of sort of a body of literature... so from that point of view, it’s not useless... My second paper, absolutely not. I don’t think it’s really added anything to the [clinical speciality] landscape whatsoever*” (P9). However, other participants were confident their research had been impactful as it had been highly cited or, in one case, had contributed to national clinical practice guidelines.

Experience and satisfaction

All of the above themes fed into the trainees’ subjective project experience and satisfaction with the process,

which ranged from highly positive, satisfying experiences; *“My experience was very, very positive”* (P6), to dissatisfaction and difficulty; *“My view of this research project is that it’s a waste of time”* (P5). This, in turn, impacted participants’ interest in pursuing research into the future; *“Not that I was ever planning to be a researcher, but I am definitely less likely to do further research now”* (P9). Some participants viewed their project outcomes and experiences more positively in hindsight than when conducting the research; *“With the benefit of hindsight, I’m much more satisfied now that it’s actually published...I think I probably would have had a very different answer if you’d asked me this question maybe at the end of completing it, because I think I just had enough of it and just wanted to be over and done with it”* (P10).

Many of the themes mentioned above fed into trainee experience such as: pre-existing research experience; *“It was a very positive experience, though, I appreciate that, that’s not the average trainee project journey. I mean, I had some advantages...I had a bit of pre-knowledge that enabled me to select something that I knew with a fair amount of certainty I would be able to sort out”* (P6); research interest; *“I quite enjoyed the experience, I guess I’ve always had an interest in research. I’m actually doing a PhD now”* (P14); and access to enabling factors through luck or personal drive; *“I would say very satisfied...because of how the local support, facilitated it and reduced the frictions that you will normally have”* (P3).

Discussion

Our findings revealed variation in levels of satisfaction with, and perceived outcomes of, mandatory research projects, with trainees feeling luck played a significant role in accessing crucial enablers such as protected time, quality supervision, and accommodating institutional structures.

Trainees’ reliance on serendipity for obtaining such support is problematic, as their absence is likely to lead to an unsuccessful and negative research experience, and less meaningful and impactful research outputs. Negative experiences with mandatory research projects are not uncommon, with previous research showing that trainee satisfaction with mandatory research projects is highly variable [11, 14, 16, 45]. Quantitative research reports results similar to our study- that trainee satisfaction is adversely impacted by poor quality of supervision, inappropriately scoped projects, lack of organisational support, and frustration with prohibitive “hoop jumping” type training requirements [13, 17, 46]. Trainees also see mandatory projects as a source of stress and a negative impact on work-life balance [47]. Our research found some trainees who had access to supports did have highly positive experiences, while others felt, in hindsight, the

experience was valuable despite challenges during the project, especially if they then pursued a research career or produced meaningful research outputs [48]. However, this variability in experiences must be addressed, as negative experiences may discourage future engagement in research which is contrary to the intended curriculum goals [14, 33]. Colleges do not leave the development of clinical competencies to chance, but instead support development through an intentionally structured and appropriately resourced training curriculum. The same should apply to the development of research competencies if these are also a required component of the curriculum.

Our recommendations are twofold. Firstly, we recommend a well-supported pathway for trainees to pursue research projects voluntarily, requiring enabling supports to be embedded in both the colleges and the health services trainees are placed within. It is arguably unfair to expect research-naïve trainees to have success in environments where such support is unavailable. Even the more research-experienced trainees in our study reported that they anticipated a lack of supports and intentionally limited their project scope, thereby curtailing their potential research contributions and engendering a missed opportunity for further skill development. The literature affirms many training programs lack key elements shown to support trainee research activity, such as an organized research curriculum, appropriate supervision and protected time [32, 46, 49–52]. A trainees’ experience should not rely on where they are placed, especially when current systems may disadvantage those placed in under-resourced regional/rural locations or smaller health services [16, 53].

Supports should also be directed to the subset of trainees who choose to complete a project, rather than attempting to provide this significant level of support to every trainee, for two reasons. Firstly, it is likely impractical, both in terms of limited funding available for such activities, and because of a paucity of skilled research supervisors [5, 29]. The current system compounds this issue, as trainees who feel their training has not furnished them with the necessary research skills are nonetheless compelled to supervise the mandatory projects of future trainees, potentially passing on suboptimal research practices. As a minimum, any research-naïve trainee should have access to both content and methods expertise, which may necessitate multiple supervisors. Secondly, studies have shown that supports may be better directed to health professionals with higher intrinsic motivation to do research, as they are more likely to be successful than those whose only motivation is to satisfy external training requirements [11, 54, 55]. Some colleges, such as the RACGP [56], have recognized the need

for institutional supports for those few wishing to pursue a clinician researcher career and provide a specialised pathway, including protected time. Few doctors currently identify as clinician researchers [57], and their numbers are declining [58]. For most trainees, the value of mandatory trainee-led projects for clinically-orientated careers, and for adding meaningfully to the evidence base, is questionable. We posit that the limited resources available for research should be funnelled into high quality supports for research-interested trainees, and increasing the number of clinician researchers.

Our second recommendation is for colleges to value and incentivise forms of research engagement other than leading a project for the remainder of trainees. Although research interpretation and application must remain an expected competency for all trainees, we have found a mismatch between the intended goals of research projects and the realized outcomes. If the key goal of specialty training research requirements is to produce clinicians informed in research methodology, more emphasis should be placed on appraising and implementing research, and on participating in, rather than leading, research. Options other than mandatory research projects may be more effective and far less resource intensive in imparting the necessary skills. Key theories of research culture and behaviour change hold that strategies that make such change easy, normative and rewarding should come first, with mandated compliance being used as a last resort [59]. Studies support this, finding that even mandating trainee research activity has mixed impacts on trainee outputs [11, 18, 49], and that trainees would prefer activities other than mandated research projects [14, 16, 18, 45, 47]. However, many trainees also emphasise the importance of understanding the principles of research and evidence for training [16, 18, 29, 45, 47], and recognise that trainee-led research outputs are vital to career progression in many specialties [14, 16]. For all these reasons, research skills must remain an expected trainee competency, and each college must consider the barriers and benefits to various research training options specific to their context.

The literature suggests some alternate options for trainees to gain research competencies. The Australasian College for Emergency Medicine replaced their mandatory research project with a choice of a coursework or project pathway in 2009, due to perceptions of research waste and limited value to training [17]. Subsequent research comparing the two pathways found trainees rated the coursework pathway as more useful in achieving all learning objectives [17]. More recently, the Royal Australasian College of Surgeons has given less focus in its general surgery training criteria on leading a research project, and more recognition to

other types of research activities and prior learning [60], although formal evaluation is yet to occur. Participation in large student and trainee-led research collaboratives could also be recognised activities in college curricula, as they not only produce high quality and impactful research, but are also effective in developing research competencies and promoting long term research engagement of clinicians [61–64]. Such avenues for trainees to participate in, but not lead, research projects should be supported, in order to provide trainees without a preconceived research interest an opportunity to develop this interest. To support a sustainable cultural shift, changes also need to be considered up- and down-stream from residency, including processes that disincentivise the research “arms race” by refocusing evaluation of research activity at key career transitions on quality and competency, rather than quantity [65].

Underlying potential changes to research requirements should be a clear and agreed upon understanding of the research competencies expected of trainees, and, accordingly, of specialist doctors. A set of core research-related competencies relevant to all graduating trainees need to be defined [66], and colleges provided support to develop and implement new curricula. Competencies for those completing a research project should also be clarified, acknowledging the goal is to impart basic research skills, and that it is not possible or necessary to impart all the skills required to consistently produce high quality research after a single small-scale project [67].

This study has two key strengths. First was the use of qualitative methodology which allowed for in-depth exploration of trainees’ experiences and perceptions. Second was the inclusion of doctors from multiple medical colleges which added to the diversity of elicited perspectives and experiences. The study also had limitations. Our participants may have provided a more supportive narrative of mandatory research compared to the general trainee population; indeed many stated they felt their experiences were more positive than those of their colleagues. The participants who expressed interest in participating in interviews were more likely than other survey participants to say they were supportive of mandatory research projects (67% vs 39%) and express satisfaction with their overall research experience (55% vs 34%) [29]. The study only included trainees from Australia limiting the transferability of the findings to other countries and contexts. The reasons for non-participation of New Zealand trainees are unclear, but possibly due to the fact they made up a smaller percentage of the survey participants (13%). Finally, the important views of those who support research projects, including supervisors, leadership and research support staff, were not investigated.

Conclusion

This study found that specialty trainees have variable experiences and levels of satisfaction in undertaking mandatory research projects. While some trainees were able to draw upon previous research or personal drive to engender positive experiences, the success of many projects relied on chance. Trainees also varied in their perceptions of project outcomes, in terms of their own learning and contributions to the evidence base. Given that considerable resources are needed to provide trainees with a good research experience with a higher likelihood of worthwhile outcomes, we recommend that resources for research are directed only to those trainees interested in conducting research projects during residency. For other trainees, alternative pathways to mandatory projects should be considered and resourced within mainstream curricula to allow the acquisition of necessary research related skills and competencies. These strategies in combination could constitute more effective and sustainable methods for achieving the desired twin goals of producing research-informed clinicians and supporting the growth of clinician researchers.

Abbreviations

ENHANCE Enhancing the Research Development of Medical Specialty Trainees
SRQR Standards for Reporting Qualitative Research

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-024-05954-6>.

Supplementary Material 1. Interview guide.

Acknowledgements

The authors would like to acknowledge the funding support of the Gold Coast Health Collaborative Research Grant Scheme and the valuable contributions to initial concept and funding acquisition of the overarching ENHANCE project team (including Caitlyn Withers, Rachel Bourke, Adrian Barnett, Alexandra Bannach-Brown, Paul Glasziou, Mark Morgan, Thomas Campbell and David Henry). The authors would also like to extend their sincere gratitude to the participants who generously gave their time and shared their valuable insights and experiences for this study.

Author's contributions

CB is the study guarantor and led the project, while PS led project administration. PS, CB and CN conceptualised the study, and all authors, as well as the broader ENHANCE authorship group (see protocol), contributed to the development of the methodology and funding acquisition. Data collection and analysis was undertaken by JH, overseen by CB. All authors contributed to the analysis and/or interpretation of data. CB and JH developed the original draft, earlier versions of the draft were reviewed by PS, CN and RL, and later drafts were reviewed by remaining authors. All authors read and approved the final manuscript.

Funding

This study was funded by the Gold Coast Health Collaborative Research Grant Scheme 2020 (RGS2020-037).

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to identifiability of the interview transcripts. Portions are available from the corresponding author on reasonable request. A published protocol for the study is available at Open Science Framework: <https://doi.org/https://doi.org/10.17605/OSF.IO/BNGZK>

Declarations

Ethics approval and consent to participate

The Bond University Human Research Ethics Committee (PS00149) provided approval to conduct the study. All methods were carried out in accordance with relevant guidelines and regulations. All participants provided written informed consent.

Consent for publication

Not applicable.

Competing interests

The authors declare no financial competing interests. Some authors have roles relating to medical training which may influence their opinions, listed here. CB & PS are currently on the Queensland Training for Research Active Clinicians (QTRAC) Working Party. RL is Clinical Sub Dean GCHHS for Bond University; RACS educator and course director, Care of the Critically Ill Surgical Patient (CCrISP) and Operate With Respect (OWR); and Co-Chair, Supervisors and Educators Reference Group (SERG), A Better Culture project. KF is Dean of Medicine, Bond University; Executive committee member and Treasurer Medical Deans of Australia and New Zealand (MDANZ); Chair of Education and Evaluation Committee (EDEC) of the Australia and New Zealand College of Anaesthetists (ANZCA); and Chair of Professional Practice research network (PPRN). HJ is a member (casual) of the RANZCP Committee for Examinations. GK is a trainee research requirement adjudicator for the Australasian College of Emergency Medicine. IS gives lectures on research methods to trainees of the Royal Australasian College of Physicians and has been an examiner for the college. EV is chair of the Australasian College of Dermatologists Academic Research Committee (ARC). JH, CN, SM & DP report no specific roles of interest.

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Received: 12 April 2024 Accepted: 23 August 2024

Published online: 18 September 2024

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