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The design and evaluation of a postdoctoral mentoring programme to support the academic and professional development of NIHR Academy members

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Abstract

Purpose – This study provides insight into the design, implementation and evaluation of a structured developmental mentoring programme, created to support the academic and professional development of postdoctoral researchers from diverse disciplines and backgrounds. The research context is the National Institute for Health and Care Research (NIHR) Academy. The Academy attracts, trains and supports health and care researchers through personal or institutional career development awards, as well as training and academic career development within NIHR infrastructure, schools and capacity-building structures. The mentoring programme is open to all UK-based postdoctoral Academy members.

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Design/methodology/approach – The approach first sets out the context, purpose and design of the mentoring programme. Second, we explore the extent to which the mentor- and mentee-defined relationship objectives were fulfilled and whether the programme met the underlying principles of the NIHR. Finally, we identified participants' level of satisfaction with the programme. The study adopted a pragmatic multiple-method evaluation, with matched-pair mentee and mentor interviews that were thematically analysed.
Findings – The study found that all participants felt they met all or most of their mentoring objectives and overall programme objectives. The mentoring programme was highly valued by a diverse range of participating mentors and mentees from different health, care and research disciplines, reflective of the NIHR Academy.
Research limitations/implications – Limitations of this study include the short-term outcomes that participants were asked to reflect on at the end of the one-year programme; other studies may capture longer-term outcomes through longitudinal evaluation.
Originality/value – The study contributes to the body of knowledge regarding the benefits and organisational support that postdoctoral researchers (mentees) and their mentors receive through mentoring programme participation. This study underscores the importance and impact of a structured, formal organisational mentoring programme.

Keywords Mentoring, Mentee, Mentor, Research career development, Programme impact evaluation, Complex interventions
Paper type Research article

Introduction

This study provides insight into the design, implementation and evaluation of a structured developmental mentoring programme, created to support the academic and professional development of postdoctoral health and care researchers from diverse disciplines and backgrounds. For postgraduate researchers and those in the healthcare professions, navigating the complexities of the early career period can present significant challenges. Early-career healthcare researchers can face structural and cultural changes concerning their career trajectory and insecurity about funding and employment (Academy of Medical Sciences, 2023, International Standards for Mentoring and Coaching Programmes, n.d.). Mentoring can enable and support researchers to successfully bridge critical career junctures.

Background literature

Literature straddling the healthcare researcher careers context and mentoring identifies the benefits of mentoring for early-career researchers. Studies demonstrate the positive contributions and influence that mentoring can have on postdoctoral career progression (Omary *et al.*, 2019; Shepherd *et al.*, 2022). Lack of clarity regarding career routes is an ongoing challenge for postdoctoral researchers, and pressures around research productivity may be a barrier to accessing career development opportunities (Åkerlind, 2005; van der Weijden *et al.*, 2016). Mentors can facilitate opportunities for interdisciplinary research and offer new perspectives on research career development and future employment (Veronica *et al.*, 2016). Furthermore, mentoring has been widely promoted to support academic career development and work–life balance within the clinical academic community (Raine *et al.*, 2022; Ranieri *et al.*, 2016). Mentoring has been identified as an enabler in supporting underrepresented groups, including women and ethnic minorities (Guevara *et al.*, 2018; van der Weijden *et al.*, 2016; Vassallo *et al.*, 2021). With initiatives such as the Athena Scientific Women's Academic Network (SWAN) Charter in the United Kingdom (UK), there has been an upsurge of structured (formal) mentoring programmes. Beyond the UK, structured mentoring programmes have been created for healthcare professionals, designed to impact retention, increase the number of scientists, strengthen research within universities and enhance the career development of postdoctoral researchers and clinicians in specific professional groups (De Vries *et al.*, 2023; Shepherd *et al.*, 2022). However, it appears barriers to successful mentoring do exist; Shen *et al.*'s (2022) systematic review found that mentees can find it challenging to find appropriate mentors based on gender, underrepresented status and/or career stage. The increase in structured mentoring programmes represents an attempt to address a number of the barriers identified in previous studies within the healthcare professions.

Traditionally, in the organisational context, mentoring programmes match an experienced mentor with a less experienced mentee within a developmental relationship to support growth, learning and integration (Hobson and Sharp, 2005; Munro *et al.*, 2024). Internal mentoring programmes may be associated with hierarchy and power, as the mentor may adopt and engage in a degree of sponsorship activities, as previously identified by Kram (1988). The mentor roles of advocate and sponsor are seen as valuable for supporting mentees in effectively navigating early academic success, particularly within their own institution (Lin *et al.*, 2022). However, the external mentor can facilitate conversations through a wider lens. The external relationship may benefit from a heightened degree of authenticity, honesty and disclosure outside the organisational hierarchy (Hafsteinsdóttir *et al.*, 2017). Mentors and mentees may explore challenges and topics beyond the immediate work context. We have seen a shift towards a developmental approach in mentoring within the healthcare professions, where mentors support mentees in their personal and professional development, as well as addressing specific and wider contextual needs (Munro *et al.*, 2024). Developmental mentoring relationships can provide both career and psychosocial benefits (Higgins and Kram, 2001). Career benefits might include socialisation and navigation, understanding the career landscape, career transition and promotion. Psychosocial benefits might be broader to encompass self-efficacy, self-worth and confidence, facilitating personal and emotional development (Day and Allen, 2004; Higgins and Kram, 2001; Kram, 1988). A number of studies in the healthcare professions have shown the key roles of the mentor to be advisor, role model and confidant. In the role of advisor, mentors may provide career advice, including the life of an academic, coping strategies and juggling competing demands (Munro *et al.*, 2024). Specific mentoring needs in the healthcare professions might include grant writing and funding applications. In this context, mentors may help early-career mentees to develop and enhance their knowledge and skills to successfully secure future funding (Termini *et al.*, 2021). As a role model, mentors may 'shape knowledge, skills, and attitudes of future healthcare professionals' (Ramani *et al.*, 2024, p. 2). In the role of confidant, mentees are able to share vulnerabilities and receive affirmation (Munro *et al.*, 2024). Here, the role of peer mentors extends to career- and role-specific support as well as general support, reflecting on professional challenges and providing reassurance (Lin *et al.*, 2022).

In recent years, there has been an upsurge in a variety of mentoring programme approaches, including peer mentoring, reverse mentoring and reciprocal mentoring (Haddock-Millar *et al.*, 2023; Smith *et al.*, 2024). Within the overarching approaches, we have seen new typologies emerge, including reciprocal by design, reciprocal by outcomes and emergent reciprocal (Haddock-Millar *et al.*, 2023). Mentoring programmes in the healthcare professions have adopted a variety of approaches, including triads (mentee, mentor and supervisor), structured mentoring, informal mentoring and the provision of access to multiple mentors, including peer or senior mentors, which are supported by a number of different communities, including structured and formal mentoring programmes, networking events and social media (Munro *et al.*, 2024; Termini *et al.*, 2021). Building a network of mentors, including internal organisational mentors, informal mentors through community connections and external mentors through structured mentoring programmes, can be seen as complementary sources of personal and professional support (Ramani *et al.*, 2024).

Regardless of the mentoring approach adopted by the programme and mentors and mentees, evidence shows that the success and sustainability of programmes are based on a number of key drivers, including the robustness of the mentoring programme framework and an evaluation strategy that identifies the effectiveness of key components and the perceived value of the programme (Clutterbuck *et al.*, 2017; Haddock-Millar *et al.*, 2017). Evaluation of mentoring programmes consists of quantitative, qualitative and mixed-methods approaches, including case studies (De Vries *et al.*, 2023; Dickson *et al.*, 2021). Data collection methods might include a variety of self-reports from mentees and mentors, objective assessments of participant satisfaction with the programme's processes and outcomes relating to the goals of the programme and wider impacts which may be unanticipated (Crites *et al.*, 2022;

Ramani *et al.*, 2024) Studies consider the phases of the mentoring relationship, relationship dynamics, mentoring differences in culture, ethnicity and gender, as well as multiple mentoring impacts at various levels including mentees, mentors, institutions, collaborators and research networks (Dickson *et al.*, 2021; Ramani *et al.*, 2024). A number of studies, including scoping studies, have shown a distinct variance in the robustness and degree to which organisations evaluate their mentoring programmes, as well as measurement of concrete outcomes linking back to the programme's aim and objectives, including longitudinal tracking of impact (Crites *et al.*, 2022). Professional bodies, such as the European Mentoring and Coaching Council (EMCC) Global, suggest that organisations adopt a variety of evaluation approaches and measures appropriate to the context and nature of the mentoring programme. This includes the assessment of participant satisfaction with the programme elements, including onboarding, matching, training and ongoing support, in addition to outcomes related to the mentoring relationship itself. The professional body also suggests the evaluation of impact across a range of levels, including individual and participant, programme and organisational.

Introduction to research setting

The National Institute for Health and Care Research (NIHR), funded by the Department of Health and Social Care , is a major UK funder of high-quality health, public health and social care research. The NIHR Academy was established in October 2018 following a strategic review of training to examine research capacity building across the organisation and look at future training and related support needs. Developing a mentoring programme for Academy members (i.e. those receiving training and career development awards), particularly those at the postdoctoral career stage, was highlighted as a priority in part of the Strategic Review of Training (Key Priorities; NIHR, *n*.d.b), including widening the remit that was previously available only to medically qualified members (Academy of Medical Sciences, 2023).

Whilst institutionally based mentorship programmes exist in most universities across the UK, the NIHR mentoring programme focusses on developmental relationships and those outside the mentee's primary place of work (Hafsteinsdóttir *et al.*, 2017). The "outsider" mentor is a particularly important feature of the mentoring programme. Traditional mentoring focuses on a dyadic developmental relationship between a senior mentor and a junior colleague (mentee) and is typically sponsored by the employing organisation (Hafsteinsdóttir *et al.*, 2017). Whilst this may result in career benefits such as sponsorship, challenging projects and assignments, there are several potential dangers with the internal mentor model. For example, a supervisor–subordinate relationship may emerge, and boundaries may be more challenging to maintain (Burke and McKeen, 1997; Johnson *et al.*, 2007). Such underlying power dynamics and tensions may influence the extent to which the mentee can be open, honest and authentic. Research has also indicated the positive benefits of mentorship through having an independent "safe space" and providing unbiased career advice for health researchers. In the NIHR mentoring programme, the "outsider" mentor seeks to provide an independent, safe space for mentees to share, reflect and learn. Mentees may benefit from both internal and external mentors who serve different purposes and needs, which can be reconceptualised as a development network (Higgins and Kram, 2001). Many of the programme participants will have both internal and external mentors as a requirement for a career development award and/or as an investment in personal and professional growth. Those within the network are important and most valuable at a particular stage of career development.

The purpose of this study

The purpose of this case study is to share the evaluation of the NIHR mentoring programme as a complex intervention that aims to support the academic and career development of NIHR postdoctoral researchers from diverse professional disciplines and backgrounds. The programme adheres to the UK Policy Framework for Health and Social Care Research;

more information about the policy and the NIHR guidelines can be found here: https://www.nihr.ac.uk/about-us/who-we-are/policies-and-guidelines/sharing-of-research-data

This includes ethical protocols including voluntary informed consent, participation and withdrawal. In addition, the evaluation approach and data collection tools were approved by the steering group, and participants were informed of the approach and voluntarily participated in the evaluation surveys and interviews. We followed the Medical Research Council's framework on complex interventions to plan a process for developing, implementing and evaluating the mentoring programme, as described in Figure 1 (Skivington *et al.*, 2024). The full details of the mentoring programme can be found here: https://www.nihr.ac.uk/nihr-mentoring-programme-2022-evaluation-report

The mentoring programme evaluation has three overarching aims: first, to understand the extent to which the mentor- and mentee-defined relationship objectives were fulfilled, second, to identify whether the programme met the underlying principles of the NIHR and finally, to assess the participants' degree of satisfaction with the programme to assist the programme team to understand which aspects of the programme design are most valued by the participants.

Development of the intervention

The mentoring programme was designed to support the academic and career development of NIHR postdoctoral researchers and communities by.

(1) using lessons from a previous NIHR mentoring programme aimed at those in medical careers to develop a new programme for postdoctoral award holders from a wider range of research disciplines and professional backgrounds;

(2) developing an evidence-based, structured model of mentoring;

(3) supporting mentoring relationships between individuals from different organisations and institutions;

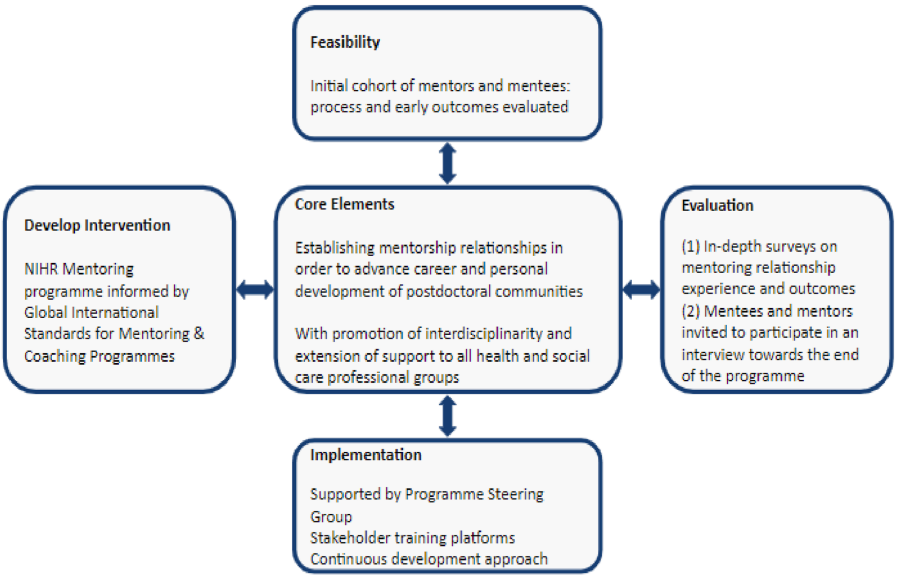

Figure 1. Framework for developing and evaluating mentoring as a complex intervention. Source: Adapted from Skivington *et al.* (2024)

(4) promoting interdisciplinary working; and

(5) promoting equality, inclusion and diversity.

We adopted the EMCC Global International Standards for Mentoring and Coaching Programmes (ISMCP, n.d.) as an overarching set of standards for designing, implementing and evaluating the mentoring programme. This framework was chosen to ensure that the strategic objectives of the programme were clearly defined, to provide stakeholder training and input into programme development, to consider personal needs and preferences in matching mentors and mentees, to set a continuous improvement path for the programme, to ensure design and implementation transparency and to establish good administration and support. Overseen by the steering group, the programme consisted of three elements.

(1) a matching process, where mentors and mentees nominated areas of importance;

(2) a training and continuing professional development (CPD) platform that included a compulsory orientation virtual session (familiarising participants with critical elements of the aims and processes of the mentoring programme) and optional development virtual sessions (covering a wide variety of pre-determined and mentee- and mentor-suggested topics); live and on demand options were available with pre-recorded webinars and supporting online topic guides (available here: https://www.nihr.ac.uk/career-development/nihr-academy/benefits/mentoring-programme, n.d.c); and

(3) networking and building connections through optional monthly virtual drop-in sessions and in-person events to support the mentoring relationships.

The duration of the NIHR mentoring programme was 12 months. Mentors and mentees joined the programme on a volunteer basis. All participants attended an online induction covering the key aspects of the mentoring programme, including an introduction to the concept of mentoring, optional continuous professional development offer, matching criteria and process, ongoing development support and evaluation. The time commitment was 6–12 h across the year, with flexibility regarding the number and duration of mentoring sessions and overall hours. Participants were encouraged to define their relationship purpose in the early phase of mentoring and set goals where applicable.

A logic model was developed to assist the implementation and evaluation of the programme (Figure 2).

Methodology

The study used a pragmatic multiple-method evaluation, comprising an interim and summative survey and matched-pair mentee and mentor interviews. The interviews were used to collect qualitative data, which were analysed thematically.

Data collection period

Data collection took place from April 2021 to November 2022 and consisted of a mixed-methods approach to evaluate the short-term outcomes of the programme. Using a logic model (Figure 2), our primary outcome for the short-term analysis was the overall mentor and mentee experience, specifically the extent to which the objectives of the mentoring relationship were fulfilled. Secondary outcomes included perceptions of how the programme met the Academy's mentorship aims and satisfaction with the four programme support elements.

Survey approach

Interim and summative surveys were sent via email to all mentors and mentees; the interim survey was sent approximately 6 months after the commencement of the programme, and the

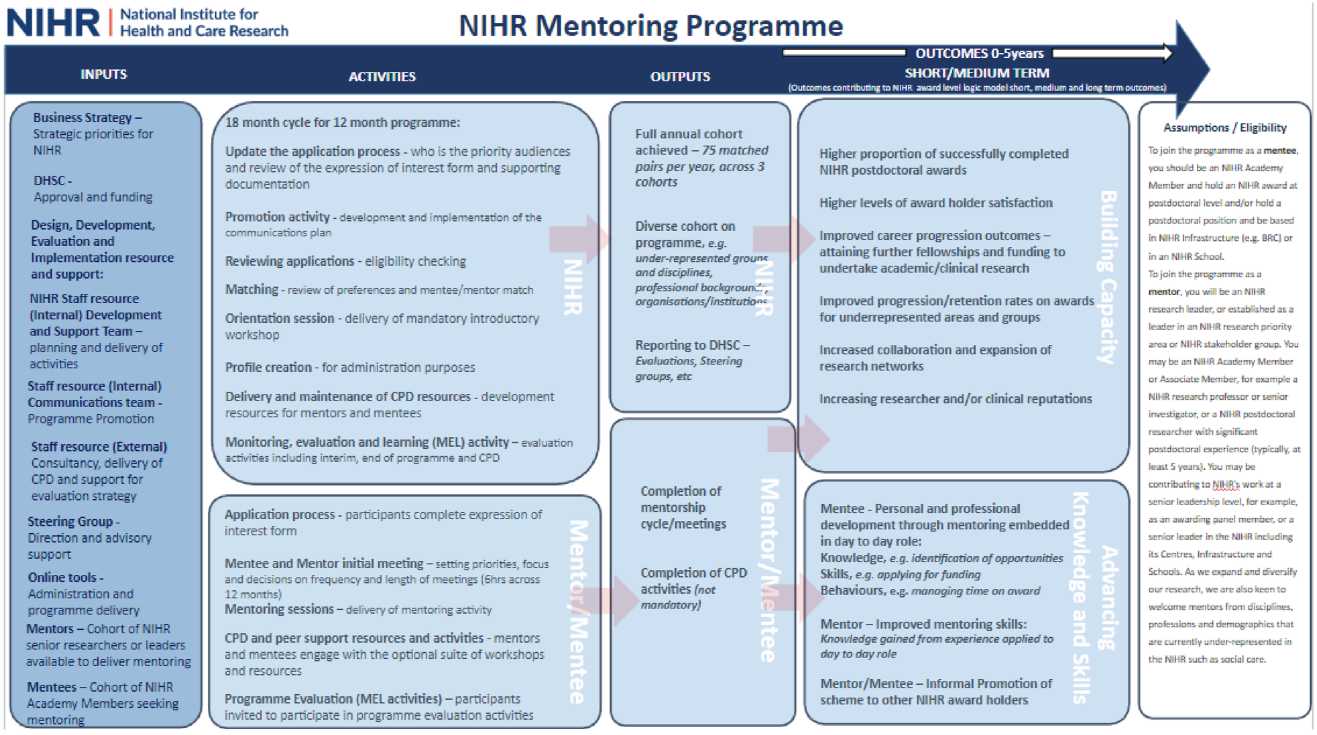

Figure 2. The logic model developed for the NIHR mentoring programme. Source: Authors' own work

summative survey was sent upon programme completion. The summative survey focussed on participants' satisfaction with the mentoring programme; perceived changes to skills, knowledge and behaviours; and mentoring programme aims (e.g. mentoring a wider range of researchers, perceptions of interdisciplinary working and promoting inclusion, equality and diversity). The survey results are presented, including any missing data. Age ranges were used to avoid identifying individuals. Subgroup analysis was not considered feasible due to the sample size. Results were tabulated, and the descriptive statistics were calculated using Excel.

Interview approach

All mentees and mentors were invited to participate in a semi-structured interview of mentor and mentee pairs to explore their experiences of the programme and provide case studies showcasing these experiences. An accredited external mentoring consultant experienced in mentoring programme evaluation conducted the interviews. All interviews were conducted one-to-one using Zoom (Zoom Video Communications Inc., 2016) and consisted of a topic guide aimed at exploring participants' experiences with the programme and within their mentoring relationships and encouraging critical engagement to identify how the programme can be improved. A professional transcriber was used to transcribe all interviews, which were uploaded to NVivo 1 (QSR International Pty Ltd, 2020) for analysis.

Thematic analysis was conducted to identify common themes among pairs, across cohorts and within the overall data set. Coding was undertaken by a researcher independent of the mentoring programme. A coding framework was developed by an independent researcher based on preliminary familiarisation with the data set. Coding was carried out inductively using an iterative approach throughout the analysis continued.

Data analysis, results and discussion

The analysis of the data, results and discussion are provided below.

Programme participants

Ninety-one mentees and 80 mentors completed the programme from a variety of professions, backgrounds and geographical areas. The mentors were senior leaders who were either Academy members or associate members. The mentees were postdoctoral Academy members or postdoctoral researchers based in NIHR infrastructure, for example, in an NIHR biomedical research centre or in an NIHR school. Some examples of mentee roles included a postdoctoral researchers in the School for Public Health Research, an academic clinical lecturer and a research fellow. Table 1 shows the full breakdown of all mentors' and mentees' professional backgrounds and geographical locations. All mentees were matched with mentors outside their organisation. While the largest group of participants were medically qualified, which is reflective of the Academy membership, almost half of mentors and one-third of mentees were from other professional backgrounds. The Academy data shows that between financial year 2021/2022 to 2023/2024, 3% of Academy awards were from a social care background, 8% of awardees were nurses and 2% of awardees were midwives. At the time of the programme, the Academy membership was reflective of the programme participants. Taking into consideration the eligibility requirement, some of those awardees will have been too early in their career to apply for the programme.

Survey results

Equality, diversity and inclusion survey results. All participants were asked to complete a de-identified protected characteristics self-declaration form, which was completed by 55 mentees and 35 mentors, with response rates of 60% and 44%, respectively (Table 2). Of the respondents, over half of the mentees and mentors were female (60% and 57%, respectively), with the majority declared as heterosexual (91% in both groups). The average age of mentees

Table 1. Participant professional background and current geographic location

Professional background	Mentees % ($n = 91$)	Mentors % ($n = 80$)
Medically qualified	68% ($n = 62$)	51% ($n = 41$)
Primary care research	3% ($n = 3$)	4% ($n = 3$)
Allied health professional	4% ($n = 4$)	11% ($n = 9$)
Nursing and midwifery	5% ($n = 5$)	14% ($n = 11$)
Public health research	7% ($n = 6$)	5% ($n = 4$)
Social care research	0	1% ($n = 1$)
Psychologist	4% ($n = 4$)	2.5% ($n = 2$)
Epidemiologist	($n = 0$)	2.5% ($n = 2$)
Social scientist	2% ($n = 2$)	1% ($n = 1$)
Statistician	2% ($n = 2$)	2.5% ($n = 2$)
Paediatrics researcher	1% ($n = 1$)	1% ($n = 1$)
Behavioural scientist	1% ($n = 1$)	1% ($n = 1$)
Operations manager	1% ($n = 1$)	2.5% ($n = 2$)
Geographical location		
Greater London	26% ($n = 22$)	31% ($n = 25$)
Southeast	11% ($n = 8$)	10% ($n = 8$)
Southwest	11% ($n = 9$)	11% ($n = 9$)
East Anglia	7% ($n = 5$)	5% ($n = 4$)
West Midlands	12% ($n = 9$)	6% ($n = 5$)
East Midlands	11% ($n = 9$)	8% ($n = 6$)
Northwest	4% ($n = 13$)	13% ($n = 10$)
Yorkshire and Humber	13% ($n = 12$)	10% ($n = 8$)
Northeast	3% ($n = 3$)	6% ($n = 5$)
Other	1% ($n = 1$)	0% ($n = 0$)

Source(s): Authors' own work

Table 2. Matched pair mentor–mentee interviewee characteristics

Mentor gender	Mentee gender	Mentor professional background	Mentee professional background
10 × female	9 × female	6 × Medically qualified	7 × Medically qualified
6 × male	7 × male	4 × Allied health	2 × Allied health
		2 × Nursing	2 × Nursing
		2 × Social scientist	1 × Epidemiologist
		1 × Primary care	1 × Primary care
		1 × Social care	1 × Public health
			1 × Social scientist
			1 × Statistician

Source(s): Authors' own work

was 40 years (range 29–58), while the average age of mentors was 52 (range 35–64). There was a lack of ethnic diversity, with 76% of mentees and 91% of mentors coming from a white background. We have not disaggregated the results by subgroups to protect anonymity.

Interim and summative surveys. The overall response rate for the interim survey was 41% ($n = 70$), with response rates for mentees at 40% ($n = 37$) and for mentors at 41% ($n = 33$). The interim results were used to develop and improve the programme. Overall response rate for the summative survey was 37% ($n = 63$), for mentees it was 35% ($n = 32$) and for mentors 38% ($n = 31$). Only the summative results are presented here.

All mentees and mentors felt that the programme met all or most of their objectives. Overall, mentees and mentors were satisfied or very satisfied with their mentoring match: 93% ($n = 30$) of mentees and 87% ($n = 27$) of mentors. Ninety-seven percent ($n = 31$) of mentees and 98% ($n = 32$) of mentors felt they were easily able to build trust, with 53% ($n = 17$) of mentees and 64% ($n = 20$) of mentors intending to continue their relationship, 87% ($n = 27$) of mentors expecting to support another mentee in a future programme cohort and 75% ($n = 24$) of mentees planning to apply to be a mentor in the future.

While the highest proportion of those enrolled in the programme was from a clinical background (87%; $n = 149$), 13% ($n = 22$) of mentors and mentees had a non-clinical background. For perceptions of interdisciplinary working, 56% ($n = 18$) of mentees and 71% ($n = 22$) of mentors described their relationship as interdisciplinary.

All mentees and mentors were invited to attend these CPD sessions, which offered topic-specific online workshops, peer reflective online discussion groups, drop-in online sessions, topic guides and pre-recorded topic sessions: 53% ($n = 17$) of mentees and 48% ($n = 15$) of mentors engaged with the sessions. Seventy-four workshops and training sessions were conducted virtually, with the most popular sessions focussing on a structured approach to mentoring. "Purpose, direction and goals" and "Work–life balance" were the most popular sessions (mentee and mentor attendance 16%; $n = 27$ for each), followed by "Developing an effective mentoring relationship" (mentee and mentor attendance 14%; $n = 24$). Seventy percent of mentees and 90% of mentors felt the CPD and orientation sessions were helpful.

Qualitative analysis of perceptions of experience and impact

Thirty-two individual interviews were conducted (16 pairs of mentors and mentees) across three cohorts. Overall participation was 18% for mentees ($n = 16$) and 20% for mentors ($n = 16$). Interviews lasted between 22 and 52 min and were conducted by an accredited mentoring consultant, external to the programme. All interviews were conducted one-to-one using Zoom (Zoom Video Communications Inc, 2016). The interviewee characteristics are presented in Table 2. Characteristics include gender and professional background.

Participants described largely positive experiences of the mentoring programme and the relationships they had built within it. Mentees and mentors voiced similar thematic elements of their experiences of the mentoring process. The mentoring dynamic was characterised as a reciprocal and engaging process for both sides of the relationship. The following themes (illustrated in Figure 3) highlight the experience and domains discussed by both mentors and mentees.

Theme 1: meeting across institutions and subject areas. Both mentors and mentees highlighted the programme's intention of connecting across institutions and subject areas as a unique and valuable aspect, providing an appreciated level of neutrality that removed some potential power imbalances that can hinder mentor–mentee relationships. The role of the mentor was commonly described as a neutral "sounding board" for challenges and frustrations, allowing for honesty without breaching confidentiality. This also created opportunities for broadening academic networks and exploring new research collaborations. Mentors were also able to provide independent advice for fellowship applications, providing neutral readers to comment on the clarity of the application for non-specialist audiences.

> I think she gave me a bit of a sounding board which was beneficial, allowed me to clarify my thoughts on quite a lot of things which was beneficial . . . and just someone without an agenda guiding you through your own thought processes. (Mentee)

For mentors, meeting with a researcher in an external and sometimes novel area was typically an engaging experience and an opportunity to explore cross-disciplinary ideas and collaboration.

> There were similarities and differences, I'm a psychologist, my mentee a GP [general practitioner], but had similar experiences of working across NHS [National Health Service] and academia. They

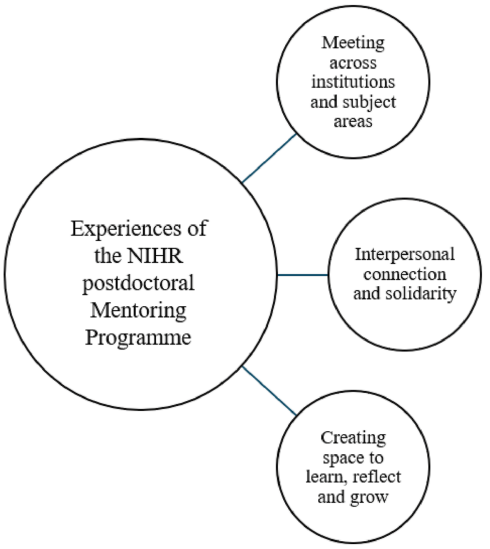

Figure 3. Diagram of analytical themes. Source: Authors' own work

> created a bond and simpatico understanding, but also awareness of different places and challenges. (Mentor)

In a few pairings, mentees or mentors stated that they would have preferred to speak to someone in a similar field of research or who used similar methods. In these cases, both members of the pairs typically still felt they had received interpersonal and professional value but thought a more directly affiliated researcher would have been more helpful.

> I just felt like I didn't have enough exposure to his world or his subject field particularly to be able to help make those connections. And maybe that is not what he needed – what he needed was somebody who was entirely separate from his field or research but could appreciate or understand it and then could say, in general these are some steps to take and let me help you track them as we go. (Mentor)

Theme 2: interpersonal connection and solidarity. Forming a mentoring relationship was typically described as a rewarding opportunity for interpersonal connection, fostering solidarity towards shared challenges. Frequently, this was described as easy and enjoyable.

> I've really enjoyed it. It's been, as I say, the mentee is a great person, so it's been nice to meet her and get to know her and hear about her work that was also interesting. So, it's a great opportunity to connect with somebody that is just a really good person who I am sure is gonna do great things. In that sense it was a pure pleasure and in no sense onerous. (Mentor)

Most matched pairs considered themselves compatible, either professionally or personally and shared experiences that connected them, including burnout, balancing clinical and academic responsibilities, navigating academia with caregiving responsibilities and being from a minoritised ethnic group or a specific regional or class background.

> We did think about it because of the challenges of racism . . . he was facing quite a bit of that in his institute and what to do about it. You know, how does one handle this? . . . I think just talking a bit about it with somebody else and just to highlight, well, you are not alone. It may look easy to you looking at me sitting here now but it hasn't been. (Mentor)

Women and people from minoritised ethnic groups voiced the importance of connecting as underrepresented groups in academia. The mentoring process allowed for valuable guidance on areas like racism and sexism in the workplace, balancing clinical and academic obligations and overcoming low points in an academic career.

> So, personally, that was a very emotionally challenging time. So, again having the mentoring going on about that time was really very helpful . . . [sometimes I feel I have to put a] superwoman cloak on me, and I could come into that mentoring session and take that cloak off and just be myself. That was very helpful. (Mentee)

Theme 3: creating space to learn, reflect and grow. Mentees and mentors highlighted the value of having a dedicated space and time to invest in learning, reflecting and growing. Mentees described being encouraged to think more deeply about the "bigger picture" of the future and what they wanted from their careers, which were concerns that could easily get lost in the rush of day-to-day work.

> I do think she made me stop and think about some of the things where I have kind of accepted how they are . . . I think I probably just took a bit more of, I have been a bit more direct in terms of my own career and future and value, you know, stating my value within my department which I suppose is mainly the biggest thing that was the issue for me. (Mentee)

The matching of mid-career academics with later-stage researchers was viewed as highly positive, as this stage of progression could bring forth new challenges, workplace expectations and ups and downs throughout their careers. Mentees valued that mentors held senior leadership positions, as this gave them perspective on the higher levels of academia and the benefit of decades of experience.

> He was very similar to me only at a more advanced stage in his career. That was the single thing that made the biggest difference that I could completely relate to him and I felt that he was able to relate to me because he'd been in a similar situation in the past. (Mentee)

Mentors highlighted the benefit of hearing from researchers beyond their typical peers, as it could be easy to overlook the challenges faced by junior colleagues.

> I was interested in seeing things from the perspective of trainees working their way through the research pathway. It gives you an insight into other University processes, other people's experiences which in turn better equips you to advise and support across the programme. I mean there's a lot of talk these days about reverse mentoring and making sure that we optimise opportunities for learning and growth. So, I thought it would be an interesting thing to participate in, meet somebody that you otherwise wouldn't have contact with and support their career and, as I say, learnt something in the bargain. (Mentor)

Discussion of findings

Using the EMCC Global ISMCP framework, we designed and implemented a mentorship programme as a complex intervention for postdoctoral researchers in the NIHR Academy and evaluated its short-term outcomes and satisfaction. There was overwhelming satisfaction with the programme meeting the objectives of both mentors and mentees. The programme included both male and female participants from a range of professions and disciplines across different backgrounds and geographical areas, which are broadly representative of the Academy's membership. However, the ethnic background, particularly among mentors, was predominantly white, with only a small portion of self-reported responses for gender, sexual orientation and disability. At the time of programme commencement, capacity development in social care research was relatively new to NIHR, which is why there were limited mentees from that discipline.

The mentorship programme is aligned with the underpinning principles of the organisation: collaborative and multidisciplinary, inclusive and engaging the talents and energy of diverse people in all areas of our work. The programme adopted a pragmatic mixed-methods approach, combining interim and summative surveys with matched-pair mentee and mentor interviews, where several issues were identified around three areas: the centrality and nature of relationships in the programme, the topics discussed by mentors and mentees and the infrastructure for organising the programme.

Nature of relationships in the programme

Mentors and mentees reported being able to develop good relationships, with evidence of reciprocal learning within the mentoring relationships, suggesting that the programme may be defined as reciprocal by outcome (Haddock-Millar *et al.*, 2023). Previous research has highlighted that such developmental mentoring relationships can offer career and psychosocial benefits (Higgins and Kram, 2001). In reciprocal mentoring programmes, even those that are reciprocal by outcome, both the mentor and mentee may recognise the benefits and value of the mentoring interaction. One of the most significant perceived benefits of the mentoring programme is the purposeful promotion of interdisciplinarity and the broadening of the participants' developmental network (Higgins and Kram, 2001; Kram, 1988) Meeting across institutions and subject areas can offer new perspectives on research career development and the future (Omary *et al.*, 2019) Aligned with previous research, the mentees and mentors recognised the benefits of a developmental relationship that exists outside of the mentee's primary place of work (Haddock-Millar *et al*., 2017). There was a heightened degree of authenticity, honesty and disclosure outside the organisational hierarchy (Hafsteinsdóttir *et al.*, 2017). Mentees felt able to discuss both personal and professional aspects of their lives, without the influence of internal organisational bias or perspective.

The widening of the programme to include broader professional discipline representation, geographical representation and diverse participation was designed to develop interdisciplinary relationships. Both mentors and mentees reported widening of their knowledge and gained further insights into new work areas, and crossing institutional mentorship created opportunities for future research collaboration and the broadening of academic networks.

While mentoring relationships can last for many years on an informal basis (Kram, 1988), the NIHR mentoring programme specified one year for the formal programme. Our mentees' and mentors' views differed on whether the stated year was too long, too short or about the right amount of time. Several pairs chose to continue their mentoring relationships as they had formed a significant connection or felt they had more progress to make. Other mentors or mentees highlighted a natural "pulling away" prior to or near the end of the mentoring programme. An important aspect of our programme was the flexibility to continue where both parties feel there is value. The underpinning logic model was focussed on the structures and processes in delivering the programme: further examination of the centrality and nature of relationships to deliver the expected longer-term impact of the programme would be beneficial in future evaluations.

Topics discussed by mentees and mentors

The details of discussions were confidential between mentees and mentors; however, participants were asked about the broad issues they discussed and what they found most valuable. Discussion topics were often aligned with career development and progression, a space where mentors typically felt comfortable supporting and guiding. In the role of advisor and guide, mentors felt comfortable providing career advice, including the life of an academic, coping strategies and juggling competing demands (Munro *et al.*, 2024). The most frequent mentoring subject areas typically included work–life balance, fellowship applications, balancing clinical and academic tasks and managing workplace dynamics. Specific to the healthcare professions and the context of this programme, grant writing and funding

applications featured mentors in supporting their mentees to successfully secure future funding (Termini *et al.*, 2021). Additionally, mentees were given space to reflect on ongoing tensions in dynamics or labour demands, allowing them to strategise and act towards navigating them more effectively.

Overall, mentoring approaches varied in their levels of goal setting and planned outputs, with these being flexibly negotiated between mentor and mentee. The programme positions the role of the mentor as dynamic and flexible, adapting their approach to the mentee's development needs. Therefore, the mentors' responsiveness to the development needs of the mentees is a key determinant of the success of the mentoring relationships. These are features that could be explored to understand the programme's longer-term impact – that is, the degree to which relationships were flexible and responsive to needs and then whether the issues discussed made a difference to career trajectories and, ultimately, building research capacity. How the programme sits alongside other career development support could also be explored in the longer-term evaluation.

Infrastructure to deliver the programme

The NIHR mentoring programme requires sustained investment. This was a clearly articulated aspect of the programme's logic model and would need to remain prominent in understanding this complex intervention. We have learnt some details about the costing of the programme. Costs for setting up a mentoring programme can vary significantly, depending on the robustness of the programme methodology, infrastructure and staffing support, participant training and participant numbers. The cost for the first year of the programme for all cohorts was £127,992, which was £682.80 per participant. The costs include internal NIHR staffing expenses for the management and administration of the programme, as well as external mentoring consultant support for the programme framework and the CPD elements. Mentors are not paid for their involvement in the programme. This can be factored into future evaluation, particularly of the programme's long-term impact.

Conclusions and recommendations

The purpose of this study was to set out the design, implementation and evaluation of a structured mentoring programme, created to support the academic and career development of NIHR postdoctoral researchers from diverse professional disciplines. The study had three overarching aims: first, to understand the extent to which the relationship objectives defined by the mentors and mentees were fulfilled; second, to identify whether the programme met the underlying principles of the organisation; and finally, to gauge the participants' degree of satisfaction with the programme.

The mentoring programme and ongoing evaluation demonstrate an appetite for mentoring across disciplines and professional backgrounds, particularly among those who may not have a strong mentoring tradition or may not have had access to programmes in the past. Through this initial phase of delivering the programme, we have learnt much to help us better understand how the programme operates as a complex intervention. A clear strength is the interdisciplinary working; mentees sought mentors from cognate or complementary disciplines or professional backgrounds.

We were able to support mentoring relationships between individuals from different organisations and institutions – a key component of the programme. This promoted the expansion of participants' external networks and attempted to take some of the hierarchy and power out of the relationship dynamics that may be experienced in internal mentoring relationships. We hope this increases mentees' sense of agency in the relationship and thereby frees them to fully explore issues and, hopefully, build better (more open and able to discuss issues and explore realistic pathways for their development) mentor–mentee relationships. Of course, this needs to be built on trust and rapport, which must be established afresh in a new

relationship. It also has to be sustained and nourished if the discussions are to continue to resonate with the mentee enough for them to use as a basis for development planning and action. Future research in this area would benefit from a more detailed and longitudinal exploration of mentees' sense of agency and the interaction with trust in the relationship to identify its impact on a developmental pathway.

There was clear evidence of reciprocity and mutual learning within the mentoring relationships. Similar to other mentoring programmes in different contexts, our programme illustrates the power of mentoring to cultivate mutually beneficial mentoring relationships, where the positive impact reverberates beyond the mentoring relationships and programme. Mentor and mentee relationship objectives were fulfilled in the majority of cases. There was a high degree of satisfaction within the relationship and the supporting structure put in place to support the programme participants.

The mentoring programme continues to prioritise colleagues from disciplines and professional backgrounds who have not previously had access to mentoring programmes or historically a strong mentoring tradition; however, additional work is required to ensure that the programme supports those from minoritised ethnic backgrounds both within and outside the Academy. The main challenge of the programme has been that the equity, diversity and inclusion (EDI) data collected has never been fully representative of the cohort, as the de-identified protected characteristics self-declaration form is non-mandatory and has seen low response rates of 60% and 44% in the first year of the programme. The NIHR has been developing a new awards management system, which the Mentoring Programme will use starting from financial year 2025/2026. All EDI data will be collected at the application stage. Going forward, the Mentoring Programme will have an accurate picture of the diversity within the programme and the representation of minority ethnic backgrounds. This is something that we will continue to prioritise and take forward through future cohorts of the programme to ensure we are reaching the broad range of Academy members.

During the financial year 2023/2024 (year 3), the Mentoring Programme successfully delivered a research project to better understand the Academy members' needs around mentoring provision. Following the project, the Mentoring Programme expanded in January 2024 (year 4) and the programme extended its mentee eligibility criteria from 2 years postdoctoral and above to final year PhD candidates and upwards. The programme increased its matched pairs from 75 to 150 per year. By expanding eligibility, the mentoring programme has been able to support early-career researchers at a pivotal and transitional point in their careers. In November 2024 (year 4), the programme increased eligibility to those on an integrated clinical academic pathway (ICA), which is made up of allied health professionals, nurses, midwives, pharmacists and other healthcare professionals, which has increased the programme's support to underrepresented professional backgrounds. As the mentoring programme has scaled up its delivery, the programme team has expanded to support the delivery of a larger programme. The programme has also encouraged mentees who are 2 years postdoctoral and above to transition to becoming mentors in the programme and support early career researchers. Training has been developed to support mentees who would like to develop their mentoring skills and become mentors.

The programme team has worked collaboratively with the NIHR Global Health Team to develop a small pilot mentoring programme based on the same framework as the domestic programme and using the learning gained to provide mentoring to its Global Health Research members.

Limitations and further research

The results may not be generalisable to all participants and other contexts. Those who took part in the matched-pair interviews typically reported positive experiences and outcomes; therefore, the perspectives of those who may not have had such positive experiences may not have been captured and the results are not representative of all cohort participants. The

programme is a voluntary undertaking, as is participation in the evaluation; therefore, there is the potential for imbalance due to self-selection bias. This may be mitigated by longitudinal evaluation, which aims to collect objective impact data.

Using the complex interventions approach to understand the mentoring programme and its impact encouraged us to clearly articulate the goals of the programme, determine how to achieve them and plan for the evaluation of a feasibility phase to inform the evolution of the programme. This is a strength of this work as it enabled a transparent approach to the programme and its reporting, facilitating a deeper understanding of the complex interactions involved in a mentoring programme intervention. This fits well with the ISMCP framework's principle of a continuous learning approach to evolving mentoring programmes. As a result, we are better placed to plan and undertake the next phase of the evaluation, incorporating a longitudinal evaluation framework.

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