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Building Research Capacity: The Impact of a Uk Collaborative Programm

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Abstract

Objective: Strengthening research capacity (RC) amongst health professionals has both organisational and individual benefits. It can increase the quality of research and support the transfer of evidence into practice and policy. However there is little evidence on what works to develop and strengthen RC. This paper contributes to the evidence base by reporting findings from an evaluation of a programme that aimed to build capacity to use and do research amongst NHS and Local Authority organisations and their staff in a large English Research Partnership Organisation.

Methods: The evaluation used multiple qualitative methods including semi-structured interviews, focus groups and workshops (n=131 respondents including Public Advisers, university, NHS and local government partners).

Results: The RC buidling programme provided a range of development opportunities for NHS and local authority staff resulting in increased confidence and skills to undertake, participate in and use research. Additionally, positive influences on organisational practice and collaborative working were reported. Conversely, challenges to developing research capacity were also identified as were the importance of resources, senior level buy-in and the relevance of research topic to practice in facilitating participation in the programme.

Conclusion: CLAHRC-NWC's RC building programme differed from convential approaches giving less emphasis to formal teaching and more to experiental learning and focusing on both individual capacities and supporting organisations to integrate RC building into staff development programmes. The findings demonstrate that providing opportunities for staff in NHS and local authority organisations to develop research knowledge and skills alongside an infrastructure that supports and encourages their participation in research can have positive impacts on research capacity and organisational research culture. The potential for generalising this approach to other organisational contexts is discussed.

Keywords: research capacity; Evaluation; Research skills; Collaboration; CLAHRC

Introduction

Developing research capacity (RC) amongst health and social care professionals can yield many benefits. Having a research literate workforce can contribute to a country's capacity to lead its own development [1]. It can also help to ensure that high quality research is conducted and the findings inform service policy, planning, commissioning and practice [2-4]. Finally, practice-based research collaborations can increase the relevance of research and its potential use by those involved [5].

In the UK, a number of policies and strategies have sought to support research capacity building in the health sector including the NHS R&D policy 'Best Research for Best Health' published in 2006 and the formation of the National Institute for Health Research the same year [6]. The latter funds research, but also has a strong focus on developing increased RC across health and social care and in public health [7,8]. More recently, the Health Education for England Research and Innovation Strategy published in 2017, aims to "build capacity and capability amongst the current and future healthcare workforce" to achieve active participation in clinical academic research and innovation [9]. Public Health England has also published a strategy for research translation and innovation, which prioritises developing public health RC [10]. Many other governments and global partnerships invest considerable funds to support research capacity building in healthcare [11]. Initiatives can be found in most high-income countries, where enhanced RC is recognised as an important pathway to improved efficiency and effectiveness of services for example in Canada and Australia [12,13]. There are also initiatives that focus on improving research capacity in low and middle income countries such as the WHO 'Planning for success' initiative [14]. Although there is a growing interest and recognition of the importance of developing RC there is relatively little known about what is effective [15]. Kumar indicates that the literature tends to explore and define methods to build research capacity but there is less focus on organisational strategies and evaluation of strategies that facilitate capacity building in research [16,17].

The Collaboration for Leadership in Applied Health Research and Care for the North West Coast (CLAHRC-NWC) was a partnership between 36 organisations including universities, NHS provider and commissioning organisations, local government authorities, third sector organisations and the regional innovation agency working alongside members of the public. It was funded by the National Institute for Health Research (NIHR) from January 2014 to September 2019 and funding has continued to support the collaboration (now the Applied Research Collaboration for the NWC). The collaboration covers an area of 2,400 square miles along the North West coast of England stretching 130 miles from north to south. Increasing capacity to conduct, engage with and apply research was one of the priorities for CLAHRC. However, its approach differed from that of most RC strategies which primarily focus on providing access to taught training courses and formal research training opportunities, (e.g. PhD or Postdoctoral fellowships) aimed at health service staff with some experience of research. In contrast, CLAHRC NWC provided opportunities for staff in partner organisations with varying levels of research experience to learn 'by doing' through formal and informal opportunities that ranged from training, participation in research projects and research activities such as research design, data collection and analysis to creating support structures within employing organisations.

This paper presents the findings of an internal evaluation of the CLAHRC-NWC's capacity building programme. It considers its impact on the individuals involved and on research practice and culture within partner organisations.

Capacity Building within CLAHRC-NWC

CLAHRC-NWC aimed to contribute to a reduction in health

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inequalities by ensuring that all activities had a clear equity element and by involving members of the public (known in CLAHRC as public advisers) in all activities. A capacity building programme was established alongside five thematic applied research and implementation programmes (Managing Complex Needs; Improving Mental Health; Improving Public Health; Delivering Personalised Health and Care; and Knowledge Exchange). It was led by a team based at the University of Central Lancashire (UCLan) and provided opportunities for staff in partner organisations to develop skills and knowledge in research, including implementation, evaluation and dissemination. Opportunities included membership of research project teams, PhD studentships, research internships and taught courses.

Two types of the research internships were provided. One consisted of general research interns who were staff in partner organisations whose time on the programme was ring-fenced by their employers. Interns received 8 training days, followed by continued support from CLAHRC staff to design and conduct a small scale research or implementation projects directly relevant to their work. The other internships were described as implementation internships and provided the opportunity to complete a Masters level module in Implementation Science with the option to gain accreditation through submission of an assignment. Training covered a variety of research methodologies and approaches, research governance, analysis, reporting, dissemination techniques and applying a health equity lens in developing project proposals.

In addition, the Partner Priority Programme (PPP) located in the Knowledge Exchange theme, provided additional intern opportunities. The PPP comprised two waves: the first focused on evaluations of the new models of care being developed by CLAHRC's NHS and Local Authority partners and the second on implementation of evidence based initiatives. Projects were clustered into thematic 'Collaborative Implementation Groups' (CIG), providing an opportunity for interns to develop their work collaboratively with professionals outside their organisations. Workshops were delivered by CLAHRC-NWC and partner staff and invited speakers covered topics such as literature review, developing logic models, stakeholder analyses, quantitative and qualitative methods and analysis, implementation science and health inequalities assessments.

Finally, the Capacity Building programme also supported the development of applications for NIHR Fellowships and sponsored eight bursaries for partners' staff to register on a part-time Masters in Clinical Research.

In total, 64 interns from 24 partner organisations were supported directly by the programme (24 doing their own research and 40 linked to projects in the PPP). Just over a third were outside of traditional clinical/allied health professional roles and included staff from Local authorities, in administration roles and public advisers. Over 20 PhD projects were also funded and supervised by CLAHRC university partners.

As highlighted above although the programme had an element of training, the opportunities to develop research skills and capacity were much broader than this. Opportunities spanned across the collaboration's six themes and involved more experiential ways of engaging in research which included bringing together different disciplines, sectors, professionals and members of the public. Therefore this evaluation explores the impacts on research capacity building across the whole collaboration and RC building activities within all the themes.

Methodology

A mixed methods evaluation of the CLAHRC-NWC was undertaken in 2017- 2018 by an internal team of academics and Public Advisers. In addition, a panel of six Public Advisers contributed to the study design and the interpretation and dissemination of findings. Importantly, although the academics leading and conducting the evaluation had research roles in CLAHRC-NWC only one was directly involved in delivering the capacity building programme.

The evaluation involved four components focused on: the public health theme's neighbourhood resilience research programme (PH); the partner priority programme (PPP) exploring new models of care; the Intern programme (IP); and the extent to which strategic objectives in relation to public involvement, health equity and research capacity building had been achieved across the collaboration (CC).

As each aspect of the evaluation had its own objectives the data collection tools varied in the extent to which they prompted participants about research capacity. The findings in this paper are an analysis of data on the processes, experiences and impact of RC building collated in all four components of the evaluation. In total, data was collected from 131 individuals through face-to-face interviews (n=58), focus groups and workshops (n=73). A diversity sample was identified from across CLAHRC partners and included members of the Management Team, Steering Board, people involved in diverse projects in a range of roles from the NHS, LAs, universities and other partner organisations and public advisers. Participants from the intern programme including interns and PhD students were also interviewed. All participants completed consent forms. Information and consent forms emphasised participation was voluntary and how data would be used. All interviews and focus groups were tape recorded.

Data analysis was conducted by a team of 7 academics and 2 public advisers. A panel of six public advisers also contributed by advising on aspects of methods and data analysis and interpretation. Transcripts were anonymised before analysis, each transcript was given a unique ID (interviewer and number). Transcripts were analysed and by two researchers

Framework analysis was applied to analyse data. Apriori themes were used in the analysis identified from the framework for evaluating RC in health care developed by Cooke which categorises 6 principles of capacity building: knowledge and skills development; investments in infrastructure; proximity of research to practice; development of linkages and partnerships; dissemination or knowledge exchange; and sustainability and continuity [18]. The framework also identifies 4 structural elements of capacity building activity which include individual, team, organisational and network levels. The six principles are considered to influence the impacts of RC building across these 4 structural elements.

Where quotations have been used to illustrate findings the reference includes the data collection method with a unique number, respondents organisations, role and the evaluation component (codes detailed above, PP, CC, PI, PH) (int=interview; grp = focus group; Local authority= LA, NHS; Roles: academic, intern, partner, PhD student, public advisor) e.g. Int30-LA-partner-PH.

Information was also obtained from routine monitoring datasets, content analysis of internal documents, including steering board minutes.

The evaluation was conducted in line with Lancaster University's ethical guidelines. Ethical approvals for the use of primary and secondary data sources were obtained from the university where the lead researchers were based: Lancaster University for research on the Neighbourhood Resilience programme and CLAHRC-NWC strategic objectives (FHMREC13028, FHMREC17023); University of Liverpool for the Partners Priority Programme research (2236); and UCLan (University of Central Lancashire).

Results

The findings are structured under Cooke's 6 principles of

Table 1: Skills and knowledge reported to have been gained from training and developmental opportunities within CLAHRC-NWC.

Research Skills	Description
Co-production	Involving members of the public and other stakeholders in research framing and problem solving
Data analysis	Conducting data analysis, quantitative and qualitative, using data analysis software such as NVivo and SPSS
Dissemination through verbal and written outlets	Devising poster presentations and reports to summarise findings, writing papers, developing videos, art-based outputs, presentations to wider audiences, and developing presentation skills
Evaluation	Conducting evaluations, evaluating differential impact
Facilitation	Facilitating meetings and workshops
Identifying and using evidence	Evidence synthesis, using evidence for change, undertaking systematic reviews, using different types of evidence for service improvement, implementation science and policy change
Political economy of context	Gaining deeper understanding of the nature of the socio-political context that frames NHS and Local Authority work
Research methods	Gaining knowledge on a range of quantitative and qualitative methods
Refining research ideas	Developing research proposals and defining research questions/topic
Research Ethics	Understanding research ethics and processes for approval

capacity building: knowledge and skills development; investments in infrastructure; proximity of research to practice; development of linkages and partnerships; dissemination or knowledge exchange; and sustainability and continuity followed by the consideration of the challenges to capacity building identified by respondents [18].

Capacity building within CLAHRC-NWC

There was a general feeling among respondents that they had gained a wide range of skills and knowledge from their participation in CLAHRC NWC capacity related activities. These are shown in Table 1.

Capacity building opportunities had enabled those with little previous experience to gain confidence in their ability to get involved in and conduct research. As these participants - a research manager and intern explained:

"*I've learnt so much, so many things and there's things that I've applied for which even 12 months ago I couldn't have even dreamt of applying for that and I was pushed forward – go on try it, do it and given support to do it. I've written papers, which again I had never even done before so I've submitted one for before Christmas and that's my first one."* (grp1-University-research manager-CC)

"I always wanted to get involved in research but I never knew how to go about doing that. I wanted to do a research project but I didn't want to go through the boring masters modules that you have to do as part of professional radiotherapy masters, I just wanted to jump straight in and get to the research part and this is what that enabled me to do…. as part of my clinical role and subsequently as a result of that applied for a masters so it's been really invaluable and it was great opportunity." (int27-NHS-intern-CC)

The intern quoted above highlights how for some involved in the RC programme the experience set them off in pursuit of further research qualifications. This pathway to enhanced research skills was not uncommon as a manager of staff on the programme highlighted:

"It's actually given them a taster…then they felt that they wanted to do something more; so they wanted to do some Masters levels, modules or they wanted to apply for a Doctorial Fellowship or a Post Doctorial Fellowship or join other research teams in doing research." (int5-LA-partner-CC)

The Health Inequalities Assessment Toolkit (HIAT) training and its application in practice as well as developing research proposals was also reported to have increased knowledge and understanding of health inequalities as this intern described:

"Yes it's definitely widened in that it's not just around discriminating characteristics which I think I was really naïve… and those characteristics that can lead to inequality like age, sex, ethnicity. It's definitely broadened my awareness that there can be factors that potentially can cause inequality that you don't consider so it does… broaden your horizons." (int28-NHS-intern-IP)

Respondents also highlighted the benefits of capacity building opportunities provided for members of the public involved in participative research:

"*We've good local [public] Advisers ….now that are contributing and I think getting quite a lot out of it themselves as individuals. So I think that's a real positive role and the more support and training we have for people to* explore *their own issues, confident in raising those issues with professional partners and agencies that can only be a good thing."* (int30-LA-partner-PH).

Those with some existing research experience/skills reported that they had the opportunity to refresh and enhance their research competency. In particular, as the quotes below illustrate individuals had been enabled to do research that they would not necessarily have had the opportunity to get involved in and/or to experiment with new approaches to health problem framing and problem solving.

"I suppose for myself because I'm from analytics I'm usually just getting involved in the number crunching but I've actually been involved in the whole process which is quite good so you are seeing something from start to finish which you don't necessarily get the opportunity to do in our department." (int20-NHS-partner-CC)

"I'm not sure that the evaluation would have been done, certainly to the level that's it's been done, without actually being a part of this programme I think there might well have been you know questionnaires sent out by you know patient experience type things but I don't think there would have been interviews or I don't think there would have been the level of engagement with staff about it without actually having done it as a formal evaluation." (grp7-LA-partner-CC)

Investments in infrastructure

CLAHRC-NWC operated in a context marked by dramatic cuts in public expenditure as the UK austerity policies were implemented from 2010. Local authorities in the North of England have experienced the greatest budget cuts which affected many of the CLAHRC-NWC partner organisations [19]. Respondents emphasised the impacts this climate had had on their workloads and the difficulties they had accessing funds for professional development and/or to conduct research in their organisations. In this context, CLAHRC's investment in infrastructure was perceived as pivotal. This investment included financial support (e.g. backfilling of posts) and funds to facilitate members of the public to be involved in research. Besides funding, structures were developed to support RC building and involvement in research including: the public advisors forum, secondment of partner staff onto research teams, the appointment of CLAHRC-NWC leads in

Table 2: Approaches to Capacity Building and Outcomes.

Infrastructure	Outcomes
Financial support	NHS and LA's Partner internships with back filling of posts to free up staff time for research; PhD studentships, research projects. Remuneration to Public Advisers for their time and input across CLAHRC activities
Senior level involvement	Senior level buy-in encouraged and accommodated Partner and Public involvement in applied research
Agreements to protecting Partner staff's time and accommodating role	Facilitated opportunities to be involved in applied research activities, training and attending meetings
Making research more visible/ credible within Partner organisations	Organisations experienced and valued different research methods
Provision of training and access to a range of research opportunities	Skills gained as shown in Table 1 on page 8

Partner organisations, the Intern programme, secondment agreements, match funding for projects; and peer support. These structures and processes were considered key factors facilitating greater involvement in RC as described by one partner below:

"It couldn't have happened without CLAHRC because CLAHRC and all that hard work and… backbreaking stuff you've done in terms of getting partners together and you know having the steering group and having this whole process has enabled this to happen, I mean I don't think this would have happened without that structure with CLAHRC and all that because you need that top level engagement to get the lower level." (grp11-University-partner-PPP)

The importance of protected time and senior level buy-in was particularly emphasised by those working in the NHS and Local authorities.

"I had quite supportive managers who when it came to data collection when I was doing the interviews they were quite flexible with allowing me to move the research day around so that I could fit my time around participants rather than them having to fit around me and sometimes I was allowed to interview staff when I should be working because it was outside of my research day as long I made the time back up." (int27-NHS-Intern-IP)

Because we have got the backing of our Director of Public Health, which is really good otherwise we would have probably not been able to do it [project]." (int35-LA-partner-PH)

Table 2 summarises the ways in which CLAHRC's infrastructures were reported to have enabled Partner and Public involvement in the RC programme and the types of outcomes reported:

Research close to practice

The concept of 'research close to practice' refers to research activities that are acceptable, accessible, appropriate and useful for those involved and the roles they undertake. Research that is close to practice increases its relevance to those involved and the potential for the knowledge and skills generated to have greater use [18]. The findings demonstrate that those engaged in CLAHRC-NWC RC capacity building opportunities felt that the research they had been involved in had been relevant for practice and had had a positive impact for them and their organisations. This ranged from the use of evidence in practice to organisational processes used to involve the public in research. The collaborative approach to knowledge mobilisation was felt to be significant because the research was not simply led by academics or based on academic interests: rather a range of organisations and partners were involved increasing its potential to be more applicable to practice and/or policy.

"So certainly the intent and I think that's been realised to a degree that the research work that we're thinking about doing within the University is much more closely aligned to what people want outside the University. It's a much clearer route I think for that work to be applied and have some kind of impact." (Int20-LA-partner-CC)

Respondents described how capacity building activities were useful at both individual practice level and organisationally.

"[*The research study] offers insight for me as a clinician into the pitfalls that patients might fall into and then ultimately end up weight regaining and I definitely use that in my clinical practice and I've feed back to my colleagues about the study so they've then gotten more knowledge."* (int26-NHS-intern-IP)

"We also had at least one member of staff from a different part of the council who went on the intern programme and I know that she benefitted from that and she did it on a programme that supported the work of our Mental Health and Wellbeing that we were working locally. So that was of benefit to the organisation as well." (int31-LA-partner-PH)

Other respondents described the value of research topics being closely aligned to their clinical practice or contributed to design of services/resources:

"I've done a project with a librarian about facilitating research amongst radiographers and information literacy… we developed workshops around information literacy and research and yes some of the stuff that had been on the training package within the internship helped us develop the way we delivered that." (int28-NHS-intern-IP)

Collaborative working

Partnerships and collaborative working is considered a key aspect of capacity building [18,20-21]. As the quotes below illustrate CLAHRC-NWC provided partners' staff and Public Advisers with opportunities to enhance research skills by opening up new spaces for collaborations across diverse organisations and with members of the public. This also included developing new relationships between public sector organisations and universities.

"In terms of collaboration for me very positive in improving the way organisations are collaborating together. I think the most important point for me is for a collaboration of this size with three universities, big number of NHS trusts, CCG's and local authorities each of which are very, very different organisations with different ways of working…. it also has supported developing an organisational understanding of the way that academic and public sector links can work better. So in other words it's opened up an opportunity to collaborate better with academic institutions" (int9-LA-partner-CC)

*"I think what it has done is brought a degree of focus to that interface between academia services and the public and brought some focus on working in that space." (*int12-Univeristy-partner-CC)

The new connections resulting from the involvement with CLAHRC-NWC and the reported impacts of these connections are summarised in Table 3.

Table 3: Impact of New Links.

• LAs sitting with academics in decision-making structures such as the CLAHRC-NWC Steering Board/ Management Group of the Public Health Theme
• NHS Trust providing studentship opportunities
• Opportunities for non-clinical professionals to work more closely with specialists who work directly with the patients leading to patient perspectives being incorporated into research
• PhDs, Public Advisors, interns, core staff and others involved with CLAHRC-NWC linking in with colleagues from different professions and creating new research partnerships
• Secondments linking LAs and NHS with universities
• The CLAHRC-NWC Community Research and Engagement Network (COREN) serving as a platform to connect and support COREN facilitators working in third sector organisations in applied research across the NWC
• Increasing knowledge of existing research support services within organisations

Table 4: Outputs and dissemination activity.

• Book chapters	• CLAHRC-NWC open days
• Case studies	• Events showcasing good practice in public involvement
• Comics	• Newspaper articles
• Conference presentations and talks	• Photographic exhibitions and public engagement activities (e.g. Campus in the City in Lancaster)
• Media interviews (radio and newspaper)	• Quizzes: snakes and ladders game on health inequalities.
• Newsletters and electronic circulation of published outputs	
• Posters and poster presentations	
• Reports and CLAHRC BITEs	
• Videos	

Knowledge transfer and dissemination

The success of capacity building has been described as research that ultimately impacts on practice and health of patients and communities [22]. At the time of writing, CLAHRC-NWC had published 70 peer-reviewed journal articles but participants highlighted their involvement in the production of a much wider range of outputs and dissemination activities as shown in Table 4.

Interns and public advisers new to research described the skills they acquired and the types of dissemination activities they had been involved in with enthusiasm.

"So one of the sessions for the internship was producing a poster. So I then used that and presented that at a couple of conferences…and as a result of some of the contacts that I made through presenting the poster from my internship I'm still in touch with the chair who is now actually helping me with recruitment for my MSc project so that's been really useful. (Int27.NHS.intern-IP)

"*When (x) told us as an advisory panel we are going to present so it's [the training] given us some ideas how to present. We prepared a PowerPoint presentation so it's given me as a public adviser some confidence to present my work, to disseminate our work as a team in front of all the PPP participants."* (grp15-public advisor-PPP)

Examples of sharing knowledge from projects and research activity to influence practice were also highlighted by those involved in the collaboration.

…"*Academic leads and service personnel have got closer together and they have shared the analysis and people have taken away the evidence of good practice or effectiveness so there's been sharing." (int4-NHS-partner-CC)*

"We are engaging with lots of different partners to make sure they understand what we're trying to do. Where the data is available for us to be able to share that data results which may lead to changes in practice, we are trying to do that." (int20-University-partner-CC)

Other examples of more innovative outputs incorporating a health inequalities lens co-produced by academic, partner staff and members of the public include:

Game: *Snakes and Ladders* was showcased in a Campus in the City event organised by Lancaster University as part of the 2016 Lancashire Festival.

Video: *The Way We Were...Now!* brought together Lancashire County Council, East Lancashire Hospitals NHS Trust and residents of Marsden Grange Residential Care Home for the Elderly in Nelson, demonstrating the outcome of collaborative work aimed at reducing admissions into hospital by improving residents' mental wellbeing.

Comic: *What's Your Story?* An artist worked with Lancashire County Council, academics and residents in Haslingden to capture their reflections while they investigated how 'social connectedness' affects

Sustainability of research capacity developed

Effective capacity building needs to include elements aimed at promoting and enabling sustainability to ensure continued development of skills, knowledge and structures to undertake research. Within CLAHRC-NWC, this has happened in modest ways. On an individual level, some participants reported progressing on to further study and research-based courses as well as fellowships and PhDs. Some also reported accessing funding (from CLAHRC-NWC and externally) to undertake further research, as a university academic explained:

"There's work that came out of the [project name] that I have been involved in; (...) I had funding now three times for three different aspects since the work that they did as part of their [project name]. If CLAHRC hadn't given that opportunity they wouldn't have progressed in that way" (grp1-University-partner-CC).

The evaluation also identified some examples of organisational changes supporting sustainability of RC. These included job descriptions being revised to include a research element and research support being integrated into existing posts. This LA Partner described a shift in 'organisational' mind-set about the benefits of research:

"It's our philosophy of approach now in our Local Authority: our senior levels from our Chief Exec down accept that it's almost a need to collaborate with the academic sector and to be able to benefit from academic expertise, knowledge and innovation, which will have great

benefit for the things that we're trying to do in the Local Authorities which is to improve quality of life for our residents." (int9-LA-partner-CC)

Challenges and barriers to developing research capacity

As the findings reported above illustrate, respondents were broadly very positive about the personal and organisational benefits arising from the capacity building opportunities provided by CLAHRC-NWC's but they also identified factors that have limited their full potential. In particular, participation of NHS and local authority staff depended largely on senior level buy-in. Where individuals did not have agreements about a specific time allocation, they struggled to balance their desire to get involved in research with their work commitments. Additionally, although respondents valued the research and the ethos of the CLAHRC-NWC collaboration, these individuals did not always have the expertise, legitimacy or influence to drive change in their organisations.

The geography of CLAHRC-NWC also created barriers. Some Partners with demanding workloads had to travel long distances to attend meetings or training, but as this university staff member notes this was necessary for collaboration to happen:

"There has been some challenges that we've all had. I think that distance can be quite unhelpful, you know, you see people along the corridor it's easier but it is just the nature of the collaboration I guess." (Int15-University-partner).

Tensions also arose because of the diversity of professional disciplines and organisational cultures that had come together in the CLAHRC. This lead to different and at times conflicting perspectives on research, health inequalities and/or public engagement as well as to concerns amongst some NHS and LA partners that at least early research was too far removed from their daily priorities.

"*There is inevitably a tension about which Partners' priorities we can look at. And that has been a tension again within CLAHRC because our CLAHRC is massive in terms of the number of organisations involved. They've all put their hands in the pocket and put something in the pot but not all of the Partners are going to have any of their priorities looked at". (Int12-University-partner-CC)*

A lack of clarity about roles on projects (an issue for academics, non-university staff and public advisers alike) may also have limited the potential for activities to increase RC for individuals as this respondent highlighted:

"*The job role was so varied and what I was doing wasn't research and it wasn't academic, it was administrative… it was very much administrative. It wasn't clear where my research focus was, what papers I would be focusing on…"* (grp1-University-partner-CC)

There were also some instances where communication had been a problem. It was suggested, for example, that information about capacity building opportunities were sometimes received by senior managers, who did not share them widely, thus limiting the potential for involvement to a selected few.

Other factors reported to have had a negative impact on the sustainability of research capacity acquired in the CLAHRC included the limitations of short-term funding for research roles and shrinking organisational capacity, linked to austerity. As a University Partner explained:

"There's one Local Authority when they came into CLAHRC they had four full time equivalents, two years in they were down to one, how could they have capacity?" (int1-University-partner-CC).

Discussion

As noted earlier, the evaluation reported in this paper was undertaken by an internal team, which had benefits, for example ease of access, but it also increased the potential for bias. Efforts were taken to avoid this by ensuring where possible that interviews and focus groups were conducted by individuals who did not work directly with participants and having two researchers coding transcripts and using an established thematic framework. Another potential limitation of the evaluation was that not all those invited agreed to take part in interviews/focus groups and therefore the findings may not reflect the full range of perspectives and experiences across the CLAHRC. Finally, the evaluation did not explore the impact of capacity building activities on research outcomes due to time restraints.

Not-with-standing these limitations the findings suggest that CLAHRC-NWC's research capacity building approach has had positive impacts at both individual and organisational levels and this is despite the very difficult socio-economic context it was functioning in. Applying Cooke's evaluative framework principles has provided a useful lens to explore the impacts more broadly moving beyond the more traditional focus of evaluations of RC building initiatives, on training delivered and outputs achieved (typically formal qualifications) [18]. By considering the processes involved in supporting capacity building we have been able to identify changes - albeit modest - in organisational culture, research experience, knowledge and skills as well as the impact of collaborative working across different sectors, professionals and members of the public.

CLAHRC-NWC's approach to research capacity building gave greater emphasis to learning from active involvement in research and to changes in organisational culture, structures and processes than conventional RC building initatives. Additionally, research capacity building opportunities were provided beyond academic settings and individuals were able to participate in activities across the research process from question development, through to research design and the conduct of research and analysis. Individuals could join existing research projects or develop their own specific research project. There was a strong focus on building capacities in research/practice/policy collaborations to support research implementation and knowledge transfer. For example, the Partner Priority Programme (PPP) actively focused on implementation and enabled interns to work collaboratively with professionals outside of their own organisations, this was facilitated through the CLAHRC-NWC in a structured way and the onus was not left on interns to make those connections which often happens when individuals are simply funded to undertake PhDs or undertake research training.

The structured 'learning through experience' approach adopted across CLAHRC-NWC was inclusive and developmental encouraging involvement of individuals with a range of experience including those with no previous engagement in research. The importance of experiential learning has also been highlighted in a previous evaluation of another CLAHRC project which found it helped to break down barriers between research and practice as well as build trust and mutual understanding amongst those involved [23]. Staff from all types of partner organisations and members of the public involved in the collaboration have developed knowledge and skills in undertaking research, evidence synthesis, knowledge exchange and dissemination.

Previous research has highlighted the importance of RC building initaitives supporting the development of networks strategic collaborations and partnerships working across organisations [24,25]. This was a prominent element of CLAHRC NWC's approach as illustrated in the use of Collaborative Implementation Groups in the PPP. This encouraged and supported interns from across different sectors to work collectively on a specific research project and share knowledge and experience.

Some of the impacts reported in our evaluation are not unique to the RC building approach adopted by CLAHRC NWC. Evaluations

have shown that formal research training through taught courses and post graduate study increase knowledge of research processes and skills amongst individuals and post-graduate training clearly involves the application of this knowledge and skills to the conduct of research. However the CLAHRC-NWC approach emphasising 'learning through experience' helped to embedd research knowledge and skills and increased confidence in the use of research evidence across a very diverse cohort of staff, including many who would be unlikely to register for post graduate training. Similarly, other benefits reported in our evaluation - such as the increased practice relevance of the research conducted, the greater likelihood of findings being taken up by NHS and local authority partner organisations and the integration of research capacity building into their general staff development programmes – are less likely to emerge from approaches that only focus on research training and skilling up individuals to undertake research.

CLAHRC NWC's approach to RC building was not without its challenges. Clear roles are required both for those supporting and engaging in RC building activities. The focus of research also needs to be meaningful for all those involved, bridging the academic and 'policy/practice' cultures of different professionals and organisations.

A key enabler has been the availability of resources to support dedicated infrastructues and processes enabling individuals and partner organisations to avoid having to fit research into existing resources and remits. Senior staff commitment is vital. Financial resources from the English National Institute for Health Research (NIHR) were used to fund partner staff and members of the public to participate in research internships, PhD studentships, and in research projects more generally. It meant specialist staff could be appointed to provide capacity building support. These staff also engaged in discussions at national meetings with other CLAHRCs, allowing them the opportunity to consider supporting similar schemes and programmes within their regions.

However it is important to emphasise that the research capacity outcomes of CLAHRC NWC are not all attributable simply to the additional funds it received from the English NIHR. The University, NHS and Local Authority partners in CLAHRC NWC also contributed significant resources in cash and kind. Some of the specialist staff providing research capacity support were on secondment from partner organisations and matched resources from partners also supported specific research projects. Key elements that supported research capacity building also arose from the nature of the collaboration and the partneship working that developed across academics, practitioners and service provider organisations. Organisations that partnerned with CLAHRC-NWC were encouraged to integrate research capacity opportunities into their staff development programmes – initaitives that did not require extra funds.

Other aspects of the CLAHRC-NWC approach that can potentially be implemented without significant resources include universities working together to identify and build capacity building opportunities not just within academic settings but with their existing partner organisations and forming new partnerhsips across sectors. Learning through experience opportunities can also be built into any research funding applications, with funds being requested to support the involvement of practice and policy partners in the research in order to build RC as well as enhance relevance and uptake.

Universities are already beginning to provide the type of infrastructure developed in the CLAHRC-NWC, such as outreach initiatives and/or forums to engage the public in their research and networks of practice and policy partners [26,27]. By identifying opportunities to develop research capacity in its wider sense beyond training and qualifications universities can help build RC in a wide range of individuals and organisations and increase the relevance and utility of the research they do. Finally, working with local univeristies, RC building opportunities such as those provided by CLAHRC-NWC (e.g. internships) could be integrated into non-academic organisations staff development programmes at little extra costs.

Conclusion

It is too early to assess whether CLAHRC-NWC capacity building activities have contributed to a sustainable culture of research in the non-university partner organisations. However, CLAHRC-NWC has planted the seeds in which an organisational culture sensitive to research can flourish. It has developed new research knowledge and skills amongst a significant number of individuals and built structures and networks across the region to support engagement of professionals and members of the public in applied research and implementation focussed on reducing health inequalities. The impact of those engaged in research has the potential to have wider effects within their teams and organisations through the prospective 'flow-on' effect and diffusion to other professionals and clinicians [28,29].

Some of the individual benefits we have identified particularly increased knowledge about research processes, methods and skills, are as likely to emerge from more conventional teaching based RC building programmes. However, we would argue that the 'learning through experience' approach adopted by CLAHRC-NWC has embedded these benefits more firmly across a diverse cadre of partner staff. It has also had wider impacts on structures and processes within partner organisations and on the relevance and utility of the research conducted – impacts that would be less likely to arise from conventional RC programmes. Enhancing research capacity is likely to be on the periphery and 'incidental' to the work of health and social care organisations if it is not prioritised and actively supported [30]. CLAHRC-NWC's inclusive developmental approaches to capacity building have also supported the emergence of more research 'friendly' cultures in organisations that do not primarily conduct and deliver research – changes that will contribute to the sustainability of the benefits we have described.

Finally, it is important to acknowledge that to some extent the CLAHRC-NWC approach depended on the availability of the NIHR research grant. But as we have suggested above many elements of the 'learning by doing' approach to research capacity building can be developed without signficiant additional financial investments. Where additional resources are required our evaluation suggests that they can be offset to some extent by the increased relevance of the research that is done and the value it can therefore bring to organisations who support staff to build thier research capacity.

Contributions

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Conflicts of Interest

The authors report no conflicts of interest in this work, research, authorship, and/or publication of this article.

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Availability of Data and Materials

Due to confidentiality, and the nature of the consent obtained, the qualitative interview transcripts cannot be shared. For further information related to this data set, please contact the corresponding author.

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