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Title: Embedded Research: a promising way to create evidence-informed impact in public health?

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Abstract

Embedded research (ER) is recognised as one way to strengthen the integration of evidence into public health practice. In this paper, we outline a promising example of the co-production of research evidence between Fuse, the UKCRC Centre for Translational Research in Public Health and a local authority in north east England. We critically examine attempts to share and use research findings to influence decision-making within the local authority setting. Drawing on insights from public health practitioners, managers, commissioners and academic partners involved in this organisational case study, we highlight what can be achieved as a co-located, embedded researcher. The benefits and risks of embedded research are explored, alongside our reflections on the added value of this approach and the institutional prerequisites necessary for it to work.

We argue that while this is not a new methodological approach, its application in public health as a way to facilitate evidence use is novel, and raises pragmatic and theoretical questions about the nature of impact and the extent to which it can be engineered. It is only with increased situated understanding of organisational culture and norms and greater awareness of the socio-political realities of public health, that new coproduced solutions become possible.

Introduction

Background and context

The purpose of translational research is to accelerate the pace of change in frontline practice or policy-making towards approaches that are informed by the latest research evidence-base (1). As early as 2000 Lomas identified several reasons why it is difficult to influence practice and policy: research is hard to find and understand (2), it may not carry actionable messages (3), may be a poor fit to the local context (4), or not be available when decisions are made (2, 5). Walshe and Davies argue that it is the very removal of the creation of evidence from the places in which it will be used that has contributed to the problem (6). As Marshall et al (7: 220) note, 'for research to have impact, both knowledge producers and users need to be involved in its creation and application'.

Embedded research (ER), where the researcher is part of a team that generates and uses research results, is one way to address this issue. It is attracting growing interest as an example of a joined-up approach to knowledge production and use, which takes account of context and stakeholder interests (7, 8, 9).

Definitions and terminology vary, with 'researcher-in-residence models' emerging in clinical settings (7) and ER in educational settings as fruitful ways of integrating evidence into policy and practice (7, 8, 10, 11). Some lessons have been learned about ER in these settings (e.g. 12, 13, 14,15) but relatively little attention has

focused on the experiences of ER in public health in local authorities (5,16, 17). It has been suggested that public health deserves 'special attention' given the ways in which tacit knowledge is embedded in programme planning and delivery (18), the importance of local government's organisational context (19), politics (16), and the wider challenges of achieving large-system transformation in health care (20) and sustaining organisational culture change (21). In this paper, embedded researchers (ERers) are defined as individuals who are either university based or employed with the purpose of implementing a collaborative, jointly owned research agenda in a host organisation in a mutually beneficial relationship (11).

ER's potential lies in its ability to facilitate interactive contact, collaborative relationships between researchers and end users, the involvement of decision makers in research processes and timely access to research, all of which are factors associated with improved use of evidence in different settings (2, 22, 23,24,25). Embedded research allows the researcher to experience the 'worldview' of the organisation concerned, its members and their partners, but also requires the researcher to assess that experience in light of academic knowledge (13: 411). It differs from ethnography because the ERer is not co-located in order to study the context, but to carry out research alongside the end users, as part of that context. In this way, ER involves a particular form of evidence co-production, with researchers and local authority (LA) staff, working together to co-create, refine, implement and evaluate the impact of new and existing knowledge that is sensitive to the context in which it is used (26). ER is akin to 'engaged scholarship' advocated as a way to 'co-produce knowledge that is more penetrating and insightful than knowledge produced by academic scholars alone' (27:815).

ERers may employ similar techniques to knowledge brokers (KB) such as linkage and exchange (28, 29, 30, 31). They may be required to adapt to different organisational contexts to foster improvement and change (32). Although co-located ERers have been seen as instrumental in facilitating communication, learning and improving the quality of evidence used in decision making (7, 33, 34), the practical implications of ER have not been fully explored and critiqued, particularly in organisational contexts prone to change and disruption (12). The hybrid position of ER can present potential challenges; competing pressures, lack of support or understanding of their role, not belonging in either organisations, ethical and ontological issues (7). It raises important questions about where co-production stops and starts.

This paper reports on a year-long ER project ostensibly conducted to evaluate an integrated wellness model commissioned by a local authority in north east England. The substantive evaluation findings that explore the effectiveness of the integrated service are reported elsewhere (35). The focus here is to report what was, and was not, achievable through an ER approach and the extent to which the choice to adopt this approach impacted on the knowledge created, and how it was shared and used to influence decision-making. The study took place between July 2015 and July

2016, at a time of unprecedented cuts in public health spending and mounting pressures on LA budgets (36). Data is drawn from the insights of the public health team members that hosted the ER (including practitioners, managers, and commissioners) and the academic partners involved as members of the research team, and project advisory group.

Methods

An important prerequisite for ER involved early knowledge brokering processes, which allowed time and space to negotiate and agree that qualitative research would be most useful. It was agreed the ERer would be based with the LA public health team 3 days a week.

A reflective fieldwork diary was kept and updated daily by the ERer recording her reflections and observations. Focus groups undertaken as part of the evaluation commissioned by public health (PH), were jointly facilitated with LA colleagues where possible. Analysis of anonymised routine performance monitoring data and interviews was undertaken in collaboration with LA colleagues who helped interpret data to understand patterns of local service use and reported outcomes. This helped build capacity by observing, participating in, and informing the research process and increased the relevance of recommendations.

The research process was overseen by a multi-disciplinary research advisory group involving academics and public health colleagues. Interim findings were fed back iteratively to participants and wider stakeholders for sense checking. Implications were discussed with service users, members of the advisory group, NHS and LA staff teams and managers before final recommendations were made.

Towards the end of the study, a review of the ER post was undertaken by a public health specialist, who undertook 1:1 interviews with public health team members (n=6). The focus was on the experience of working with an ERer, perceptions of what difference the ER post had made and recommendations for the future. A short report summarising the findings was produced and used by senior managers in the public health team to reflect on progress, and inform decision making about whether to continue the role. The review findings and researcher's experiences were jointly presented at the Fuse 3rd International Conference on Knowledge Exchange in Public Health (37) and helped shape the reflections for this paper.

Results

In the following section, data from: the evaluation report (35), reflective field notes, interviews and observations, and the ER review findings are presented to highlight the different roles of the ERer. Examples are used to illustrate the activities and mechanisms used to create evidence-informed impact. These show improvements in the delivery, monitoring and performance management of integrated wellbeing

services, and demonstrate the possibilities and limitations of an ER approach. Evidence-informed change was achieved by the ERer in several ways.

A Sounding Board

Having a desk and sitting with PH team members, enabled trusting relationships to develop and impromptu conversations and informal exchanges to occur, which were outside formal data gathering and sharing activities. One team member described this as offering a "fresh set of eyes", and different insights. In one example of this, the ERer was able to recommend changes to the assessment process for users of the integrated wellbeing service, to reflect its core aims and address the social determinants of health.

This insight sharing worked both ways. The ERer attended staff meetings, gaining insights in to the contextual pressures, organisational processes and reporting structures that PH colleagues were navigating. This facilitated reciprocal learning and enabled the research findings to be considered and used as they emerged.

A catalyst for change and timely improvements in delivery

The ERer's immersion in the organisation, provided knowledge of relevant managers with the required decision making powers, and the ability to flag issues, to create linkages and facilitate change. For example, feedback from service users involved in the research emphasised the importance of access to private, confidential meeting space for sensitive discussions about health and wellbeing. Rapid negotiations with senior managers enabled rooms to be made available for wellness coaches to use in council facilities, the civic centre, community venues and leisure centres. In addition, the research findings identified that service users wanted opportunities to volunteer and offer peer mentoring, to enable them to 'give something back'. Timely, informal feedback from the ER ensured that this could be provided and promoted, as part of wider Council initiatives.

Acknowledging achievements in targeting inequalities

Examples of effective practice are not always easily identified by large bureaucratic organisations providing multiple services. The research highlighted the significant achievements of the integrated wellbeing services in reaching people with disabilities and those living in areas of socio-economic disadvantage. Although this information was present in the routinely collected data, its significance was underplayed. The research acknowledged the challenges of working with people with complex mental health needs and long term health conditions. The ERer was able to emphasise the value of service users' stories and feedback in shaping services. These conversations endorsed the work that was producing positive outcomes and recommended investment in staff support and training.

Building research capacity

The ER actively encouraged LA and PH colleagues to be involved in the research process, including applying for ethical approval, co-facilitating focus groups with service users, and assisting with data analysis. Observations, participant feedback meetings and informal discussions with colleagues helped interpret and contextualise the evaluation findings creating new conversations, developing skills and validating findings.

New links were made between NHS service providers and LA data analysts with responsibility for performance monitoring to improve use of routine monitoring data. Better understanding of patterns of service use highlighted gaps in the available data about targeted groups, for example carers and families. This prompted discussions between researchers, commissioners and providers about how to address these gaps and helped to ensure existing information and data was used effectively in future to inform service planning

Catalyst for change and improvement in measuring effectiveness

An over engineered performance monitoring framework that focused on measuring providers' adherence to the contract made it difficult for commissioners to make meaningful judgments about how services were operating. The multiple performance indicators also overburdened providers with data recording activities. The ERer facilitated discussions with commissioners and providers of the integrated wellbeing services to amend the performance monitoring framework, reducing the substantial number of Key Performance Indicators (KPIs) to re-focus these on the most relevant outcomes.

Knowledge Broker

The ERer acted as a knowledge broker, feeding in research findings and bringing different stakeholders together at the right time to co-produce research, enhance its local relevance and usefulness to policy and practice partners. The ERer used her knowledge of services, relationships with people, professional experience and understanding of the political context to facilitate small changes. The public health team's openness to new learning and delivery staff's willingness and commitment to drive quality improvements in new and innovative ways, were critical factors associated with the successful use of new and existing evidence (38). This receptive organisational context was crucial, particularly in a climate of increasing pressures, rising demand, threats to jobs and uncertainties about the future. Constructive feedback was generally accepted positively by stakeholders as it was seen as independent. Being embedded enabled the researcher to have (sometimes) difficult conversations without provoking defensive responses or compromising working relationships.

The review of the post conducted by the public health team highlighted the importance of social and interpersonal skills over technical or topic specific expertise. The ERer role helped overcome barriers to research use, enabled understanding of

the ways in which different kinds of knowledge emerge and are used, and identified opportunities for influence. A range of contextual factors helped to ensure the success of the ER role, from inception to completion of the study, as set out in table 1.

Insert table 1 here

Discussion

While ER is not a new methodological paradigm, it is argued that its application in public health as a way to facilitate evidence use is novel, and appears to be an effective way to create small scale impact in a timely way (39). There were opportunities for the ERer to share the existing evidence-base on integrated wellness services as well as local research evidence from the evaluation to show how local services were working. The examples above show that research evidence is more likely to be used to inform service planning and delivery, if stakeholders at all levels have opportunities to consider what it means. ERers can facilitate opportunities to jointly consider the implications of research findings for policy and practice, acknowledge achievements and opportunities for wider learning. Written dissemination and short, snappy tailor-made messages are an important part of this, but are insufficient in and of themselves, to facilitate change. Informal and formal opportunities to discuss findings with colleagues, service users, officers, elected members, senior managers, and directors can be productive, by sharing local research knowledge at the point where decisions are being taken (5). This works best when it uses the existing systems and reporting structures available, and is informed by an awareness of financial and political pressures on LAs. The use of 'soft persuasive tools' are required (40).

ER enables improved understanding of knowledge use in the reality of the practice context (9). In this study, the ERer worked by using and creating, informal and formal 'bumping spaces', maximising opportunities to feed in research findings as they emerged, influencing practice and changing attitudes in stages through a process of organisational 'adhocracy' (40). As Mintzberg (41) suggests, this level of trust and informality, can allow information to flow more freely and ideas to be generated collectively. In this case, the ERer needed to recognise when such conversations were likely to be effective, hence the reference to 'opportunistic adhocracy'. By this we mean, feeding in research findings and other evidence when opportunities present themselves. This enabled research informed decisions to be considered by commissioners and practitioners who often lack dedicated time and reflective space for critical thinking. There is an important, but subtle process, at work here. If we take Schein's oft-quoted strapline for organisational culture (42) as 'how we do things around here', ER can enable new conversations, that facilitate doing things differently, which in turn suggests the modest beginnings of culture change.

As an approach, we suggest that ER works by opening avenues to facilitate interactive contact and reciprocal learning between researchers and end users, enabling knowledge to be mobilised in practice. The researcher was not seen as an external consultant, and did not operate as an outside 'expert' with specialist knowledge, but rather as a critical friend offering different insights as part of the public health team. The ER and wider research team facilitated links with international academics and local researchers, offering fresh insights. Whilst we cannot claim with any certainty that these connections and relationships would not have been created without an ERer, our perception is that the space for developing such partnerships is being squeezed.

Co-located ER as part of a LA PH team raises difficult questions about objectivity, impartiality and independence, simultaneously requiring the researcher to navigate the ethical implications of their insider / outsider role. The ERer witnessed first-hand how research can be subject to the political pushes, pulls and pressures of local democratic accountability with its competing agendas. What helped was an understanding of the people and politics, combined with open and transparent processes of knowledge co-production, assertive boundary negotiations and a willingness to learn from each other.

Conclusion

This paper shows the possibilities and challenges of ER, by illustrating that at different stages, the embedded researcher acted as sounding board, knowledge broker, facilitator, capacity builder and catalyst for change and improvement, addressing some of the early identified barriers to research use (2-6). It is argued that ER in public health enables different conversations to occur, prompting shared learning and improvement as people think and act differently. ER provides opportunities for 'conversational spaces' with access to influential decision makers, who are in positions to make a difference, at times when it matters, or when stakeholders may be more receptive.

The development of embedded approaches may therefore be important in the push for impact in research, but come with particular challenges. Even with the right combination of skills, knowledge and experience and favourable contextual ingredients, such as those outlined in table 1, the opportunities for researchers to initiate and support system wide organisational and cultural transformation are limited, especially at times of political and financial upheaval. There is a need to scale back expectations about potential impact and recognise the significance of incremental attitudinal change, leading to a willingness to try different ways of working. This reflexive dynamic approach is in keeping with calls to re-frame and map alternative approaches to impact from co-produced research (39). It suggests a need for more nuanced understanding of what it means to 'integrate' public health

evidence into practice. As Pain et al (39:4) comment, ‘deep co-production is a process often involving a gradual, porous and diffuse series of changes undertaken collaboratively’.

Strengths and Limitations

The strength of the study is that it explores the experiences of embedded research from the perspectives of public health managers, commissioners and practitioners, researchers and academics. It is limited in that it reflects the experience of one ERer located in one LA in north east England. Learning may be transferable to other settings but it is likely that specific organisational characteristics, and histories may change its impact. The findings, including the factors set out in in table 1, which helped to ensure the success of the embedded research role, will be useful for other organisations considering ER.

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The study received ethical approval from Teesside University research governance and ethics committee. R&D approvals, NHS research passports and letters of access were obtained from the relevant Local Authority and NHS Trust before fieldwork started.

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Competing interests: BK, EG, PG and AW are employed in the Local Authority which funded the embedded research post. MC was employed as the embedded researcher. PvG and RR were members of the advisory group for the study.

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