Embedded researchers' purpose and practice: Current perspectives from Australia

Running title: Embedded researchers' role and purpose

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Conflict of Interest

We have no conflicts of interest to declare. We confirm that this work is not being considered for publication elsewhere.

Abstract

Objective: The embedded researcher model proposes that if research is co-produced with academics, clinical staff will have greater engagement with and ownership of the research findings, and they will be able to integrate evidence in practice. This paper describes the role and purpose of embedded researchers in Australian healthcare settings.

Methods: A purposive sample of current and former embedded researchers were invited to participate in an exploratory online survey. Embedded researchers were defined as individuals with research qualifications who worked, or had worked, for at least 30% of their time in a healthcare organisation doing research or research capacity building.

Results: Most embedded researchers described a dual purpose, in building clinicians' capacity for research while also undertaking clinical research. Only a small proportion of respondents described their purpose as supporting and improving clinical practice. Most embedded researchers described working to both traditional academic key performance indicators and a complementary range of clinical performance and healthcare service indicators.

Conclusion: Embedded researchers provide more research development and engagement in health services than is recognised or currently reported. In addition to traditional academic indicators, they described a broad range of clinical and health service indicators which measured capacity building.

Keywords

Embedded research, performance indicators, capacity building, health service

Introduction

To maximise the impact of research, both knowledge producers and users need to be involved in its creation and application [1]. Knowledge co-production is increasingly recognised as important for research evidence to influence the organisation, delivery and improvement of health services [1]. When knowledge is created through the interaction between clinical and academic staff, clinically important issues can be addressed by appropriately designed research, and findings implemented in practice [2]. The embedded researcher model, also known as the researcher-in-residence, is a recognised strategy to co-produce knowledge for healthcare improvements. This model proposes that if research is co-produced by academics, clinical staff will have greater engagement with and ownership of the research findings. Consequently, the research will be more relevant to their service, and ultimately, clinical staff will be able to integrate research findings and motivated to action changes in practice [2]. Further, when researchers contribute their unique skills and expertise to understand the empirical evidence, mobilise established knowledge and create new evidence, they can evaluate existing services and use theory and evidence to guide change and practice improvement [3]. This collaborative process has been recognised to assist in generating research capacity in the healthcare organisation [2].

Defining characteristics of embedded researchers are synthesised in a narrative review to include having a dual affiliation, while belonging to a local team, in which they co-produce responsive research, and build research capacity [4]. This review argued that embedded research has the potential to improve healthcare quality, and that embedded researchers understand organisational culture sufficiently to focus research, secure engagement across the organisation, translate research and sustain improvement [4]. The co-production of research between academics and healthcare professionals was posited to develop research curious and

aware healthcare professionals, who with skill development could conduct and use research to inform decision making in healthcare planning, organisation and delivery [2].

However, the evidence of how embedded researchers should do this is largely descriptive. One of the goals of embedded research is the rapid incorporation of research findings into practice improvements [3]. Embedded researchers are expected to use their daily working relationships and knowledge of the healthcare organisation's context and culture to support service improvement [4]. They are encouraged to share their expert academic knowledge with health service decision makers [3]. Specifically, it is postulated that this collaboration facilitates locally relevant prioritisation of research and generates feasible recommendations for policy and practice improvement [5]. Further, embedded researchers are expected to fit research to the local context through a range of strategies including stakeholder buy-in and rigorous evaluation [6].

Importantly, descriptions of embedded researchers identify inherent challenges of competing pressures for individuals in these roles. A range of different functions for embedded researchers were documented to include a sounding board, knowledge broker, facilitator, capacity builder and catalyst for change and improvement [7]. It was acknowledged that embedded researchers needed to be flexible to meet the needs of their healthcare service colleagues while managing multiple demands and achieving research goals [1].

To continue to build the empirical base for embedded researchers, it is important to review roles in different organisational contexts. Further, asking embedded researchers about their experiences could contribute to a better understanding of this model [8]. In the period between 2015-2018, both authors were participants in the growth of embedded researcher positions in Australia. Informal discussions between both authors and with colleagues in their networks revealed a range of different roles, expectations and practical work arrangement for these

positions. At the same time, authors observed individual and management challenges to maximising the benefits expected from embedded researchers. Therefore, this study was designed to pragmatically inform future practice in supporting and facilitating embedded researchers to be able to fully realise their potential, while working between 2 very different cultures and organisations. A broad mixed-methods study was designed to better understand the variation in roles of embedded researchers in Australian healthcare settings at the beginning of 2019. The authors believe this is important information to start to understand how these positions are being implemented across Australia currently. This paper will report on the range and depth of reported aims and purposes of embedded researchers.

Method

An online survey was developed by the authors for embedded researchers to describe key aspects of their role and to share perceptions of their experiences. A range of questions were developed, informed by the gaps between the research evidence and current practice. Specifically, five aspects of practice including the purpose of the embedded position, research focus, key performance indicators, greatest achievements, and future research goals were identified to explore the basic parameters and variations in role and purpose experience by contemporary embedded researchers in Australia. These issues were chosen to explore the extent to which these positions have a dual purpose and accountability of research production and application, to survey the type of research produced and planned, and to identify how (and whether) there are supporting explicit clinical improvements.

The survey was piloted and designed for efficient responses, using drop-down menus and open-ended questions.

Purposive sampling was used in an intentional and iterative manner to invite individuals who identify as embedded researchers to describe their lived experiences and provide a deeper understanding of their complex work processes. A purposive sample of current and former embedded researchers were invited to participate via an email, which contained supporting information about the study and an online link to the survey [9]. Both authors invited colleagues from their relevant local and national networks to participate during January and February 2019. At this time, in Australia, there was no administrative consistency between naming and positioning of embedded researchers and there was no unique professional organisation. Therefore, additional snowball sampling was used to recruit embedded researchers, known to the invited participants. Invited colleagues were asked to pass on the survey to other embedded researchers they knew [10]. Embedded researchers were defined as individuals with research qualifications who worked, or had worked, for at least 30% of their time in a healthcare organisation doing research or research capacity building.

This paper reports on embedded researchers' qualitative responses to open ended questions about the purpose of the embedded researcher position, their research focus, key performance indicators, greatest achievements and future research goals. The focus of qualitative analysis was to compare data across all respondents, collating both commonality of content and identifying the range of different responses [11]. Data was extracted from the online survey into Excel and saved into a word document in which individual responses to each survey question were collated. Responses for each question were compared and common themes were recorded with a frequency of mention. We suggest that themes which were reported by higher numbers of respondents may be more important than those mentioned less frequently. However, all responses are acknowledged, in order to document the range of perspectives.

Initially responses were compared based on professional affiliation, where respondents indicated whether they belonged to a healthcare organisation, or an academic one. However,

when themes were compared within each question, they were very similar. Therefore, the data is reported as a whole.

Results

A total of 104 embedded researchers completed the online survey. Of these, half reported they were primarily employed by a healthcare organisation and half by an academic organisation. The majority of respondents reported on a current role and of these, almost half had only been in this role for less than 2 years [12]. The three key professional discipline groups were almost equally represented between nursing and midwifery, medical and allied health professionals [12].

The purpose of embedded researcher positions

In response to the question clarifying the purpose of the current embedded researcher position within the healthcare organisation, most respondents identified building clinicians' capacity for research and undertaking clinical research. Smaller numbers of responses were recorded for supporting and improving clinical practice, for strategic leadership, for supporting quality and patient safety, and for evaluation. A small number of respondents also described their role as providing a clinical service, teaching and supervising research students.

The overall aim of building research capacity and engagement was described as "*developing research capability and capacity of clinicians*", in order to "*engage clinicians in quality research projects*" and "*build a critical mass of clinician researchers*". Respondents described engaging clinicians by using a range of facilitation and educational strategies. They reported "*supporting teams and individuals undertaking small projects*", "*supporting conversations with statisticians and health economists*", and facilitating clinicians'

"*development into international conference presenters and internationally published authors in peer-reviewed journals*". Respondents described educating clinicians to "*collect, manage and interpret data*" and "*develop skills in experimental methodology, statistical design and analysis*". Through increasing the capabilities of clinicians to do research, respondents described "*raising the research profile*" of clinical areas and "*developing a research culture*".

When embedded researchers described undertaking clinical research, they emphasised the need to promote, support and produce high quality research for "*their academic organisation*" and "*for impact to patients and families*". They described conducting their own primary research in clinical environments to address the "*needs of the clinical areas*" using relevant quality and patient outcomes. They described "*generating new knowledge*" and "*building their academic leadership*". Specifically, respondents described engaging in a broad range of research contexts from basic sciences, through clinical research, to health service and implementation research. Most commonly, respondents named a clinical area of practice such as "*maternal well-being and care*" or "*cystic fibrosis research*". One respondent described having "*oversight and management of industry funded and investigator-initiated research at the hospital site*", while another reported "*supporting… pragmatic clinical and implementation trials [which] … measured patient, health service and economic outcomes*".

Some respondents described their purpose as supporting and improving clinical practice through research and "*facilitating a culture of evidence-based practice*". Some respondents wanted to "*optimise health services for patients*", "*improve patient outcomes*", detect disability early and "*research decision support tools for clinicians*". One respondent described their purpose as to "*carry out research that is informed by clinical experience and more quickly move research findings into the clinic*". Another described the connection by "*optimising care provision through embedding research into the department culture*".

A small number of respondents described the purpose of their embedded researcher position to provide strategic and clinical leadership, consultancy, and service planning. One respondent described being the "*clinical expert, who, through leadership, facilitates excellence in research based clinical practice, education, research and professional leadership*". Others described "*setting and leading the [professional] research strategy*" and being "*actively involved in delivering an annual Research Symposium and a Research Education and Training Program*".

A few respondents highlighted their purpose to support quality and evaluation within clinical services. Some reported enhancing patient safety through "*engaging clinicians in quality research projects*". Respondents also commented on their ability to "*link health service and academic staff together to enhance research quality*". Some respondents recognised longer term outcomes to encourage clinicians to "*engage in research higher degrees*". Further, some respondents recognised that through supporting current research, they could also "*identify areas where research would be beneficial*".

Determining embedded researchers' focus

Most embedded researchers described some form of a collaborative approach in determining their research focus. They described collaborating within clinical services, research teams and academic organisations. Often it was reported that "*research is guided by clinicians and consumers*". Within the healthcare organisations, respondents described the research focus being determined by the hospital executive, a research committee, the research plan, operational directives, service managers and senior medical staff. A few respondents described a team approach, such as "*I established regular meetings at which staff could discuss case reviews, guidelines, randomised controlled trials … we discussed implementation of guidelines into practice, implementation of in-house research and*

evidence-practice gaps, this determined the focus". Several respondents noted that research must "*align with national standards and priorities in health*". Respondents also recognised the guiding force of academic leaders and colleagues, and the need to align with "*university research priorities*" and "*grant objectives*".

Approximately a third of respondents determined their own research focus. They described doing their own projects, "*within my research area*" or "*within a speciality*". However, several respondents described having multiple roles such that "*my personal research is very different to the aspects of my role as an embedded researcher*" and "*I support a variety of research projects initiated by clinicians*". Similarly, another respondent described "*I am involved in research projects outside of my research area for the purpose of mentoring and assisting novice clinician researchers with their projects*". Only one respondent reported that research outcomes were "*agreed at the outset by both employers*".

Describing key performance indicators

Most embedded researchers described a mix of key performance indicators. They most commonly reported their clinical research outcomes against traditional academic indicators of grants, publications, presentations and higher degree student supervision and completions. A smaller proportion of respondents described a complementary range of clinical performance and healthcare service indicators, which indirectly described outcomes from their research capacity building initiatives. Few respondents reported direct indicators for increasing clinicians' research capacity or improving the research culture. Almost a quarter of respondents reported having no specific measures or not being sure of their KPIs.

Within the traditional academic indicators, some respondents also described teaching roles and service expectations such as "*journal editorial positions*". Only a few respondents directly described their "*impact and translation into practice*".

Respondents reported a broad range of clinical indicators, including improving "*patient outcomes*", promoting efficient patient flow, "*developing models of care*", "*generating evidence to inform practice guidelines*", "*reviewing incidents*", and ensuring "*policies and procedures are evidence based and current*". They also reported a broad range of complementary healthcare service indicators around research prioritisation and infrastructure support. Respondents described needing to "*ensure the strategic and operational plans of the service are implemented and evaluated*" and "target research priorities that improve patient care and reduce variation". Other respondents described being expected to "*develop academic and clinical partnerships*". Practically, respondents described their expectations to "*participate in research council and divisional research committees*", promote "*research funding initiatives*" and "*research forums*", provide "*service-based evaluation reports*" and report on "*national quality and safety standards*".

Strategies that directly increased the ability and motivation of clinicians to participate in and lead research were described to include listing "*clinicians as investigators on ethics applications, grants and publications*", mentoring clinicians, "*enrolling clinicians in research degrees*" and supporting clinicians to "*participate in evidence-based activities, such as journal clubs*". Respondents reported needing to "*implement a clinician researcher development program*" and promoting "*increased opportunities for research collaboration*". Several respondents described measuring their "*numbers of facilitation contacts*" and consultations.

Greatest achievements

When asked to share their greatest achievements over the last 12-18 months, embedded researchers described a range of academic, clinical and health service indicators. Commonly

reported academic successes included grants submitted and achieved, fellowships awarded, peer reviewed publications, conference presentations, international invitations and academic awards. Some respondents specifically mentioned the importance of supporting clinicians, "*to be lead authors on quality publications*", and "*as invited presenters as international conferences*". Others described enrolling and graduating clinicians from research higher degrees and engaging them in recruiting patients for clinical trials.

A range of clinical successes were reported and included specific changes in clinical practice, such as "*reducing the pressure injury rate*", developing "*clinical practice guidelines*" and "*creating and implementing models of care*". One respondent described "*testing a novel intervention in a clinical trial [before] rolling out into usual care*". Several practical decision support tools were described as having been developed and implemented to reduce patient risks, promote advocacy and reduce face-to-face appointments. Respondents described setting up "*new experimental models to investigate a research question*" and a "*successful Centre for Research Excellence*".

At the health service level, respondents described a range of successful implementation projects around "*translating clinician problems into research questions*" and "*assisting clinicians to simplify the exploration of routinely collected hospital data*". Several respondents described specific examples where they audited and reported on current practice, informed system redesign, engaged with industry partners to change practice and are "*now working directly with the [government] department on strategy*". Another respondent described "*applying evidence in the design and building of a new [service] unit to improve [clinical] outcomes and staff wellbeing*".

Further, some respondents reported healthcare governance and research infrastructure improvements, through "*establishing a governance structure*", "*building research activity*

into routine clinical practice and service delivery" and "*developing an organisational research strategy*". Several respondents reported their success in creating new conjoint positions. Several respondents also described supporting partnerships, such as a "*new and effective collaborative research group comprised of clinicians from healthcare and [academic] researchers*" and "*new collaborations with multiple researchers and within the wider community*".

Many embedded researchers reported specific research capacity building achievements, in terms of mentoring and supporting clinicians, and in building research culture. Specifically, respondents described "*engaging novice clinicians in research*", "*networking with a consumer researcher*", "*launching a state-wide initiative to support capacity building*", building a "*researcher development program teaching evidence-based practice and inquiry*", maintaining a "*monthly newsletter that builds visibility of research, showcases researcher profiles and resources to support research activities*" and supporting a "*monthly research forum to discuss research and … practice conference presentations*". Respondents described documenting increased numbers of clinical staff engaged in research studies and seeking assistance with research. Some respondents described subtle changes in their organisations' research culture such as "*hearing our department frequently talked about at hospital executive level as high achievers in research*", developing "*stronger collaboration and cooperation between individual clinician researchers and the research office at the [clinical] site*" and "*the development of an agreed clinical research budget building tool*".

However, there were few reports of patient benefits, such as "*hearing positive feedback from patients who report they received care that is based on evidence informed approaches*".

Future goals

Embedded researchers' goals for the next 12 months also reflected this mixed pattern of academic, clinical and health service indicators. Most respondents wanted to progress their current research projects. Academic outcomes of grant funding and publications were commonly described. A few respondents described wanting to increase clinicians' capacity, influence service delivery and policy.

Most respondents referred to making progress in their specific research projects; from developing and rolling out new projects, through leading and coordinating ongoing projects, to completing key projects and publications and towards identifying future projects. Practically, most respondents described needing to "*find external funding*". Many respondents also described ways in which they wanted to build and sustain capacity for clinicians to engage in research. In addition to the strategies already reported, respondents described needing to "*identify approachable research mentors*", "*embed research activities and outputs within [clinicians'] position descriptions appropriate to their level*", and "*strengthen relationships between clinicians and researchers*".

Several respondents set goals to influence their healthcare organisation's service delivery by "*establishing expectations for research activity in all departments and networks as a baseline to supporting best practice and reducing variation within clinical practice*" and "*embedding research performance measures into departmental strategy planning and performance agreements*". Several respondents set goals to "*respond to government policy initiatives*", and "*establish a national approach*". A few respondents identified seeking their own "*professorial promotion*" and research development. One respondent provided an integrated and conclusive summary;

> "*My vision is to use the synergies between my clinical and academic roles to maximise evidence implementation to improve access, equity and quality of [clinical]*

care, to result in the best possible patient and health service outcomes. I will achieve this by capitalising and building on my strong industry partnerships, esteemed professional standing, extensive health service networks and research collaborations. In particular, I will engage with those at the coal face to design and conduct clinically relevant, evidence-informed …research and translate it to health practice and consumer-focussed care. I will also continue my successful work in building clinician capacity by nurturing clinicians' translational research skills through mentorship and research supervision".

Discussion

Most embedded researchers summarised dual, almost independent purposes for their position, as building clinicians' capacity for research and undertaking their own clinical research. Only a small proportion of respondents described an integrated purpose of using research to support and improve clinical practice. To enact their purpose, most embedded researchers described collaborating within clinical services, research teams and academic organisations to generate their research focus, and to meet clinician and consumer needs. However, some embedded researchers described a tension between doing their own research and supporting clinicians' research and only one respondent reported agreement between both employers.

Most embedded researchers described a duality of key performance indicators, representing clinical research outcomes and academic indicators of grants, publications and higher degree completions, with academic KPIs more frequently and consistently reported than clinical indicators. Only a small number described integrated research and clinical outcomes from research capacity building initiatives, despite it being a key purpose of their position. When asked to share their greatest achievements over the last 12-18 months, and to identify future

research goals, embedded researchers continued to describe independent academic, clinical and health service indicators. However, there were also some clear examples of research capacity building and clinical practice improvements.

There is a predominant pattern of duality in the purpose and practice of Australian embedded research positions that can be summarised as the academic production of research, alongside capacity building activities within healthcare organisations. However, integration of research activity was described less frequently in focusing research on clinically important areas, and in using research to improve clinical practice and improve clinicians' capacity for engaging in research.

Participant responses in this study are largely consistent with the narrative review and extant evidence which propose that embedded researchers understand organisational culture sufficiently to focus research, secure engagement across the organisation and translate research [4]. From the range of different purposes postulated for embedded researchers, this study shows greatest support for research production and capacity building. However, these independent functions of building research capacity and doing their own research are more commonly reported amongst Australian embedded researchers than using research to improve clinical practice. There is some evidence of embedded researchers in Australia maximising their contributions to their health services.

In the literature, there are a greater range of indicators that could be more consistently used for measuring capacity building and describing the way embedded researchers generate clinical, health services and policy improvements than have been reported in this study. It may be that embedded researchers and their managers have limited descriptions of and organisational performance indicators for strategies to design and support research to improve clinical practice and improve clinicians' capacity for engaging in research. It is

important to highlight some strategies that embedded researchers are using in Australia currently, to inform future practice.

Embedded researchers described building research capacity in terms of developing research skills in local teams, building a research culture, and incorporating research into the organisation's systems, processes and practices [4]. They described building the skills and capabilities of research curious healthcare professionals, to conduct and use research to inform decision making within healthcare services, across aspects of healthcare planning, organisation and delivery [2]. It may be that embedded researchers functioned as critical friends for their healthcare colleagues and relevant end-user stakeholders, by facilitating their motivation and learning about research evidence that was used to inform clinical service planning and delivery [7].

This sample of Australian embedded researchers were flexible to meet the needs of their healthcare service colleagues while managing multiple demands, coping with ambiguity and conflict, and achieving a mix of collaborative research goals. Some reported informing and upholding the healthcare organisation's context and research culture to support service improvement [4]. Others described facilitating and contributing to locally relevant prioritisation of research, and collaborating to support feasible recommendations for policy and practice improvement [5]. This ability to generate multiple goals appeared to be a positive response to the prevailing cultures and incentives in both university and health service sectors [1]. Further, some respondents described negotiating needs and priorities with health service decision makers and sharing findings through practice improvements [2]. Embedded researchers also reported adapting the use and design of research to fit the local context through stakeholder engagement and evaluation studies [6].

A key limitation of this study is the uncertainty of the range and number of embedded researcher positions, and therefore, this study cannot be considered representative. This highlights the need for consistent reporting mechanisms and continued research. Further qualitative research is required to better understand these 5 aspects of practice, and to identify underlying mechanisms that operate within specific contexts to generate the outcomes described.

Practical recommendations from this study reinforce that embedded researchers are well placed to support healthcare organisations to integrate research that is clinically important and to support clinical staff to implement practice improvements. However, while there is consistency of traditional academic reporting to measure clinical research activity, there are a wide range of inconsistently reported indicators of clinical and health service performance. It will be important to better document how building the research capacity of clinicians can achieve clinical and health service improvements. It will also be important for individual embedded researchers and their managers to discuss and agree on the purpose, focus and key performance indicators of their role, so that they can be supported and facilitated to fully realise their potential, across different cultures and organisations.

Conclusion

Most embedded researchers in this Australian sample summarised dual, almost independent purposes for their position, that reflected their two source organisations. This predominant pattern of duality prioritises the academic production of personal research, alongside capacity building activities within healthcare organisations. Examples of integrated research activity were less frequently described in terms of strategies to focus research on clinically important areas, and to use research to improve clinical practice.

Given this range of inconsistently reported indicators of clinical and health service performance, it seems important for embedded researchers to use research to build the research capacity of clinicians to achieve clinical and health service improvements. Perhaps, embedded researchers provide more research development and engagement in health services than is recognised or currently reported. Clear and consistent reporting may serve to identify the diverse range of academic, clinical and health service indicators embedded researchers are currently achieving.

References

1. Marshall M, Eyre L, Lalani M, et al. Increasing the impact of health services research on service improvement: the researcher-in-residence model. *Journal of the Royal Society of Medicine.* 2016;109(6):220-225.
2. Vindrola-Padros C, Eyre L, Baxter H, et al. Addressing the challenges of knowledge co-production in quality improvement: learning from the implementation of the researcher-in-residence model. *BMJ Quality & Safety.* 2019;28(1):67-73.
3. Marshall M, Pagel C, French C, et al. Moving improvement research closer to practice: the Researcher-in-Residence model. *BMJ Quality & Safety.* 2014;23(10):801-805.
4. Vindrola-Padros C, Pape T, Utley M, Fulop NJ. The role of embedded research in quality improvement: a narrative review. *BMJ Quality & Safety.* 2017;26(1):70-80.
5. Ghaffar A, Langlois EV, Rasanathan K, Peterson S, Adedokun L, Tran NT. Strengthening health systems through embedded research. *Bulletin of the World Health Organization.* 2017;95(2):87.
6. Churruca K, Ludlow K, Taylor N, Long JC, Best S, Braithwaite J. The time has come: Embedded implementation research for health care improvement. *Journal of evaluation in clinical practice.* 2019;25(3):373-380.
7. Cheetham M, Wiseman A, Khazaeli B, et al. Embedded research: a promising way to create evidence-informed impact in public health? *Journal of Public Health.* 2018;40(suppl_1):i64-i70.
8. McGinity R, Salokangas M. Introduction: 'embedded research' as an approach into academia for emerging researchers. *Management in Education.* 2014;28(1):3-5.
9. Robinson R.S. Purposive Sampling. In: Michalos A.C. (eds) *Encyclopedia of Quality of Life and Well-Being Research*. Springer; 2014.
10. Bryman A. *Social research methods.* Oxford university press; 2016.
11. Taylor SJ, Bogdan R, DeVault M. *Introduction to qualitative research methods: A guidebook and resource.* John Wiley & Sons; 2015.
12. Coates D, Mickan S. The embedded researcher model in Australian healthcare settings: comparison by degree of "embeddedness". *Translational Research.* 2019.