BMJ Open

Building rural health research capacity: protocol for a realist review

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To cite: Young C, Patey C, Norman P, *et al*. Building rural health research capacity: protocol for a realist review. *BMJ Open* 2025;**15**:e093994. doi:10.1136/bmjopen-2024-093994

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2024-093994).

Received 21 September 2024
Accepted 11 April 2025

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ABSTRACT

Introduction While individuals living in rural areas often have poorer health outcomes and reduced access to healthcare services compared with those in urban areas, there is a disproportionate gap in research examining rural health issues and identifying solutions to healthcare challenges. This is likely due to the numerous barriers to conducting rural health research, including the centralisation of research in urban areas and limited trained personnel and resources to conduct research in rural communities. This realist review aims to identify articles focused on building rural health research capacity and develop an evidence-based framework to be used by researchers, clinicians and policymakers to improve rural health services and well-being for rural populations.

Methods and analysis We will conduct a realist review using the following steps: (1) develop a search strategy, (2) conduct article screening and study selection, (3) perform data extraction, quality appraisal and synthesis, (4) engage stakeholders for feedback on our findings and (5) report our findings and engage in knowledge translation. Search terms include variations of the terms 'research', 'capacity building' and 'rural'. Databases include (since inception) Ovid MEDLINE, Embase, CINAHL Plus, APA PsycINFO, ERIC and Scopus. A separate search of the same databases was also designed to identify relevant theories or frameworks related to research capacity building, using variations of the terms 'research', "'capacity building', 'theory' and 'framework'. Studies will be screened by title and abstract and full text by two research team members and included based on their relevance to rural health research capacity building. We will exclude articles not published in English. We will also search the grey literature to identify rural health research centres, networks or training programmes that have not been described in the academic literature. Two research team members will extract relevant data from included studies and perform a qualitative analysis based on guidelines for realist reviews.

Ethics and dissemination This review does not require ethical approval as it draws on secondary data that is publicly available. The findings will be disseminated at academic conferences, published in peer-reviewed journals and summarised in a lay report for individuals interested in developing strategies, programmes or policies to improve rural health research. The results will inform individuals developing rural health research training programmes, establishing rural research centres, or others interested in building rural health research capacity.

PROSPERO registration number CRD42023444072.

STRENGTHS AND LIMITATIONS OF THE STUDY

⇒ Draws on a realist approach to identify strategies for building rural health research capacity.
⇒ Data will be analysed using qualitative methods to develop a framework that will inform researchers, clinicians and policymakers.
⇒ Includes original research, commentaries and editorials.
⇒ Excludes articles not published in English.

INTRODUCTION

Health research disproportionately focuses on issues faced in urban areas, with limited research examining the needs of rural populations.[1 2] However, rural residents often have poorer health outcomes and reduced access to healthcare services compared with their urban counterparts.[3 4] Despite these challenges, there is a disproportionate gap in research examining rural health issues and offering tailored solutions to improve rural healthcare and overall community well-being.[5] Findings from health research conducted in urban areas, especially about the implementation of specific programmes and policies, are often difficult to translate to rural areas due to the distinct contextual factors in each locale.[2]

In rural areas, there is often limited capacity for conducting high-quality research because of a lack of rural-related research training and available academic personnel.[6] Networks of rural health researchers are often small and disconnected, requiring more significant opportunities for collaboration and strategies for developing rural research capacity.[7] As well, urban researchers often design research projects based on urban biases and "drop in" to rural areas to quickly gather research data, without meaningfully engaging with or understanding the local context.[3] Nevertheless, existing research suggests that rural communities can develop and sustain health service innovation to address their own needs.[8]

To address these issues, many policies and programmes have been initiated to improve rural health research capacity, aiming to improve the health and well-being of rural communities. Existing research regarding rural health research capacity building suggests that concentrated investment in training is required to improve research capacity and identify local needs to target research projects appropriately.[9] Much of this training has been focused on building research competency among healthcare professionals working in rural areas, who typically lack specific research expertise.[6 10] The existing literature predominantly describes rural health research capacity-building initiatives in Australia, Canada, the USA and Nordic countries.

Numerous rural research training programmes focus on developing research skills among rural physicians or other healthcare workers with an interest in exploring concerns arising in their practice,[11 12] including the 6-for-6 programme at Memorial University of Newfoundland, Canada,[12] the Master of Medical Studies programme at the Northern Ontario School of Medicine in Canada, and the Rural Research Capacity Building Programme in New South Wales, Australia.[13] While many healthcare professionals have an interest in conducting rural health research relevant to their practice, their demanding careers often make it challenging to continue this work long-term, especially in the absence of stronger support enjoyed by those with greater access to university resources typically concentrated in urban areas.[11 14]

Many research centres have been created to strengthen the capacity for conducting rural health research, taking on several different forms. One such model is dedicated rural health research centres within universities (eg, Centre for Rural Health Studies at Memorial University of Newfoundland, Centre for Rural Health Research at the University of British Columbia and Centre of Excellence in Rural Health at the University of Kentucky). Others are research centres physically located in rural areas but affiliated with specific universities (eg, Flinders University Rural Clinical School in Australia). Also, community-based research centres without a direct university affiliation support rural health research that improves the health and well-being of their immediate communities (eg, Gateway Centre of Excellence in Rural Health in Ontario, Canada, and the Carbonear Institute for Rural Reach and Innovation by the Sea in Carbonear, Canada). Governments have also established rural research centres, such as the Centre for Rural Medicine in Sweden, to engage stakeholders to identify solutions to rural health issues.[15] Additionally, many rural health research networks have been created to improve researcher collaboration, including the Canadian Rural Health Research Society[7] and the Rural Health Services Research Network of British Columbia, Canada.

While some studies have examined the success of individual initiatives, to our knowledge there are no comprehensive reviews of the strategies employed to build rural health research capacity. Therefore, we are conducting a realist review to identify the strategies, programmes and policies that improve rural health research capacity. A realist review is an appropriate framework to address this gap in the literature, as initiatives aimed at building research capacity must consider local contexts and the mechanisms by which policies and programmes function.[10]

METHODS AND ANALYSIS

Realist reviews examine 'what works, for whom and in what circumstances'.[16] This approach draws on principles of realist philosophy, which suggests that a real world exists separately from human perception that can be imperfectly understood through analysis of underlying mechanisms.[17 18] Compared with more traditional systematic reviews, realist reviews go beyond evaluating efficacy to understand *why* an intervention was effective, given the complexity involved in implementing policies and programmes.[19 20] Realist reviews assume that a theory or hypothesis underlies the design and implementation of policies, programmes and interventions and consider the interplay between mechanisms, contexts and outcomes.[19] Following Duddy and Wong,[21] we determined that a realist framework is appropriate for this review since we seek to identify real-world strategies for building rural health research capacity, recognising that the success of an intervention is often context dependent. The main outcome of this study will be the development of a framework identifying the contexts and mechanisms that build rural health research capacity.

The review is registered in the PROSPERO database (registration number CRD42023444072), and our protocol will be reported based on the guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) (see online supplemental file 1 for PRISMA-P checklist). Our methods are guided by the steps to conducting realist reviews as outlined by Pawson *et al*,[19] and our presentation of findings will adhere to the RAMESES II reporting standards for realist evaluations.[22] The process for conducting a realist review typically involves a literature review, data extraction, analysis and a quality assessment. Realist reviews also include the development of a programme theory—a description of how a programme should be structured and a hypothesis about how it will work.[19]

Research questions

This review will seek to answer the following research questions:

1. What strategies and models (eg, degree programmes, university-based research centres, government research and development units, independent research

centres, conferences and research networks) currently exist to build capacity in rural health research?
   1. Are some strategies or models more effective than others? In what contexts?
2. What activities and processes contribute to a sustainable rural research capacity-building programme? In what contexts?
   1. What infrastructure is required for a sustainable rural health research capacity-building programme? In what contexts?
3. What strategies are used for developing rural health researchers?
   1. What factors facilitate collaboration in research and support research careers in rural areas?
   2. What skills and competencies are necessary for being a rural health researcher?

The steps for gathering and analysing data to answer these questions are outlined below.

Search strategy

Realist reviews draw on various data sources, including quantitative, qualitative and mixed-methods studies, as well as grey literature.[23] The review will include any English-language studies (qualitative, quantitative and mixed methods), commentaries and editorials that focus on building rural health research capacity. We will consider studies that self-identify as having a rural focus, with the concept of 'rural' defined by the study authors themselves. There is no restriction for articles based on country, region or population.

Our research team includes academics, clinicians, experts in rural health research capacity building and a medical librarian. Search terms were identified by the research team and refined by a medical librarian and include variations of the terms 'research', 'capacity building' and 'rural' (see online supplemental file 2). Databases include (since inception) Ovid MEDLINE, Embase, CINAHL Plus, APA PsycINFO, ERIC and Scopus. A separate search of the same databases was also designed to identify relevant theories or frameworks related to research capacity building to assist in developing the programme theory, using variations of the terms 'research', 'capacity building', 'theory' and 'framework' (see online supplemental file 3). A preliminary search suggests that several conceptual frameworks describe research capacity building.[6 24–26] Once articles have been screened and identified for inclusion in the review, we will conduct backward and forward searches to identify additional relevant articles. Hand searches will also be performed if the team determines it is necessary based on the quality and quantity of articles identified. Finally, a grey literature search will be conducted using the Google search engine to identify existing rural health research centres, training programmes, conferences and research networks that are not described in the academic literature but whose operation is relevant to the scope of the review.

Screening and study selection

All articles will be stored and managed in Covidence for title and abstract and full-text screening. Two members of the research team will independently screen the articles by title and abstract. Disagreements will be resolved through a meeting between the two reviewers. If the reviewers are at an impasse, a third reviewer will determine whether an article should be included or excluded. Articles will be excluded if they are published in a language other than English and if they are deemed irrelevant to the scope of the review. The full text of articles included after the title and abstract screening will be evaluated in the same manner. At this stage, each reviewer will also indicate the reason for excluding each article.

Data extraction, quality appraisal and synthesis

The research team will develop a unique Excel file to extract relevant data from included articles. This tool will gather data regarding the study characteristics (eg, full citation including author(s), title, journal and publication data, study objective(s), country and participants) and the strategies or interventions employed to build rural health research capacity (eg, description of the intervention, contextual factors, evaluation method(s), evidence of efficacy). The tool will also include a quality appraisal of each included article. Realist reviews evaluate the quality of an included study based on its applicability to the review, considering both the article's relevance—the extent to which the research provides insight into the concept being examined—and its rigour—whether the researcher's conclusions can be considered sound based on their methodology.[19] We will incorporate quality appraisal into the extraction tool where each reviewer will rank the overall relevance and rigour as low, medium or high, adding any additional comments to support their ranking. To test the extraction tool, two reviewers will extract data from five articles and then meet to compare their results and adjust the tool as needed. As with the screening process, two members of the research team will extract data from each article and meet to resolve any disagreements or inconsistencies. If the disagreement is unresolved, a final decision will be made by a third reviewer.

Extracted data will be analysed using qualitative analysis software through a process of coding the data into categories and then identifying dominant themes, concepts or frameworks. The analysis will identify what works, for whom and in what circumstances related to the study's aim—building rural health research capacity. The synthesis will ultimately conclude with the development of a programme theory or framework regarding the contexts and mechanisms that lead to improved health research capacity in rural areas.

Patient and public involvement

Once our team has identified comprehensive findings, we will seek feedback from relevant knowledge users through surveys or brief interviews to interpret findings, evaluate the research and identify topics for future research.[27] Stakeholders are commonly included in realist reviews to ensure that findings resonate with experts working and practising in the area under review.[20] Knowledge users will include rural health researchers, rural healthcare providers interested in conducting research, students interested in specialising in rural health research and rural community members, including healthcare service users. The insights provided by knowledge users will be integrated into the existing findings, adding improved reliability and trustworthiness, especially if our review is limited in identifying relevant articles.

ETHICS AND DISSEMINATION

This review does not require ethical approval as it draws on secondary data that is publicly available. The findings from this review will be presented at academic conferences, published in peer-reviewed journals and summarised in a lay report for use by those interested in building rural health research capacity. The results will guide individuals developing relevant training programmes, establishing rural research centres, or others interested in building rural health research capacity. Members of our team will also draw on the findings to aid in developing rural health research programmes locally, nationally and internationally.

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Contributors SA is the corresponding author and guarantor. CY designed the review and drafted the protocol. MS developed the search strategy. All authors are involved in developing the concept and providing feedback throughout the review. All authors read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES

1 Barclay L, Phillips A, Lyle D. Rural and remote health research: Does the investment match the need? *Aust J Rural Health* 2018;26:74–9.
2 Rourke J, Bradbury-Squires D. Rural research: Let's make it happen! *Can J Rural Med* 2022;27:116–7.
3 Stewart R. Enough seagulls! Rural and remote communities need local researchers living, walking and talking with locals. *Med J Aust* 2020;213:514–5.
4 Subedi R, Greenberg TL, Roshanafshar S. *Does geography matter in mortality? An analysis of potentially avoidable mortality by remoteness index in Canada*. Ottawa, ON: Statistics Canada, 2019.
5 Kulig JC, Minore B, Stewart NJ. Capacity building in rural health research: a Canadian perspective. *Rural Remote Health* 2004;4:274.
6 Cooke J. A framework to evaluate research capacity building in health care. *BMC Fam Pract* 2005;6:1–11.
7 Macleod MLP, Dosman JA, Kulig JC, *et al*. The development of the Canadian rural health research society: creating capacity through connection. *Rural Remote Health* 2007;7:622.
8 Carson D, Preston R, Hurtig AK. Innovation in rural health services requires local actors and local action. *Public Health Rev* 2022;43:1604921.
9 Schmidt D, Duncanson K, Webster E, *et al*. Critical realist exploration of long-term outcomes, impacts and skill development from an Australian rural research capacity building programme: a qualitative study. *BMJ Open* 2022;12:e065972.
10 Wong Shee A, Quilliam C, Corboy D, *et al*. What shapes research and research capacity building in rural health services? Context matters. *Australian J Rural Health* 2022;30:410–21.
11 McCarthy P, Bethune C, Fitzgerald S, *et al*. Needs assessment for development of 6for6: Longitudinal research skills program tailored to rural and remote family physicians. *Can Fam Physician* 2016;62:e80–8.
12 Walsh A, Heeley T, Furlong B, *et al*. Rural health research capacity building: an anchored solution. *Rural Remote Health* 2021;21:6162.
13 Webster E, Thomas M, Ong N, *et al*. Rural research capacity building program: capacity building outcomes. *Aust J Prim Health* 2011;17:107–13.
14 Asghari S, Heeley T, Bethune C, *et al*. Evaluation plan of the 6for6 research skills program for rural and remote physicians. *Eval Program Plann* 2021;87:S0149-7189(21)00028-8.
15 Hodge H, Carson D, Berggren P, *et al*. *From lancelot to lapland: implications of engaged rural universities*. Bingley, UK: Emerald Group Publishing Limited, 2016:123–39.
16 Palm R, Hochmuth A. What works, for whom and under what circumstances? Using realist methodology to evaluate complex interventions in nursing: A scoping review. *Int J Nurs Stud* 2020;109:S0020-7489(20)30086-9.
17 Greenhalgh T, Wong G, Jagosh J, *et al*. Protocol--the RAMESES II study: developing guidance and reporting standards for realist evaluation. *BMJ Open* 2015;5:e008567.
18 Wong G, Westhorp G, Pawson R, *et al*. Realist synthesis: Realist training materials, Available: https://www.ramesesproject.org/media/Realist_reviews_training_materials.pdf
19 Pawson R, Greenhalgh T, Harvey G, *et al*. Realist review--a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy* 2005;10 Suppl 1:21–34.
20 Rycroft-Malone J, McCormack B, Hutchinson AM, *et al*. Realist synthesis: illustrating the method for implementation research. *Implement Sci* 2012;7:33.
21 Duddy C, Wong G. Grand rounds in methodology: when are realist reviews useful, and what does a "good" realist review look like? *BMJ Qual Saf* 2023;32:173–80.

22 Wong G, Westhorp G, Manzano A, *et al*. RAMESES II reporting standards for realist evaluations. *BMC Med* 2016;14:96.
23 CADTH. What is a realist review?, Available: https://www.cadth.ca/sites/default/files/attachments/2021-10/realist-review-explainer-e_0.pdf
24 Bilardi D, Rapa E, Bernays S, *et al*. Measuring research capacity development in healthcare workers: a systematic review. *BMJ Open* 2021;11:e046796.
25 Farmer E, Weston K. A conceptual model for capacity building in Australian primary health care research. *Aus Fam Phys* 2002;31:1139–42.
26 Matus J, Walker A, Mickan S. Research capacity building frameworks for allied health professionals - a systematic review. *BMC Health Serv Res* 2018;18:716.
27 Concannon TW, Grant S, Welch V, *et al*. Multi stakeholder engagement (MuSE) consortium: Practical guidance for involving stakeholders in health research. *J Gen Intern Med* 2019;34:458–63.