Health Profession Education in Remote or Geographically Isolated Settings: A Scoping Review

Journal of Medical Education and Curricular Development
Volume 7: 1–12

DOI: 10.1177/2382120520943595

Carole Reeve[1], Karen Johnston[2] and Louise Young[2]

[1]James Cook University General Practice Training, College of Medicine and Dentistry, Anton Breinl Research Centre for Health Systems Strengthening, James Cook University, Townsville, QLD, Australia. [2]College of Medicine and Dentistry, Anton Breinl Research Centre for Health Systems Strengthening, James Cook University, Townsville, QLD, Australia.

ABSTRACT: Remote health has been differentiated from rural health in Australia and defined as isolated, with poor service access and a relatively high proportion of Indigenous residents, necessitating different models of care. Educational strategies for remote health practice are often needs driven and the characteristics of remote health may be used to categorise remote health professional education. This scoping review aims to identify the purpose of health professional education for remote settings, the type of educational strategies implemented and the reported outcomes. A broad search of published literature available in online bibliographic databases was conducted. A total of 33 articles met the review inclusion criteria. A further 7 articles were identified for inclusion in the review through citation searches and the authors' networks giving a total of 40 articles. Six primary themes were established based on the educational purpose: (1) cultural competency; (2) social accountability; (3) rural and remote skill development for the general workforce; (4) remote specialisation; (5) specialist skills required for a remote workforce; and (6) remote teaching. These themes also reflect the philosophical change over time recognising remote health as a separate discipline and its value as a distinctive and efficacious learning environment. The concept of education for remote practice is proposed to describe this unique leaning environment which encompasses critical pedagogy to develop a sense of agency and social accountability, embedding the delivery of primary health care through service learning and developing relationships in a context which is transformative.

KEYWORDS: Curriculum, rural health, rural population, teaching, health professional education, programme development, teaching methods, outcomes of education, educational measurement, remote area, frontier

RECEIVED: March 11, 2020. **ACCEPTED:** May 29, 2020.

TYPE: Review

FUNDING: The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project was supported by the Australian College of Rural and Remote Medicine Education Research Grant (ACRRM – ERG) but the authors had full autonomy over the study design, data collection, analysis and interpretation as well as the contents of the final manuscript.

DECLARATION OF CONFLICTING INTERESTS: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Louise Young, College of Medicine and Dentistry, Anton Breinl Research Centre for Health Systems Strengthening, James Cook University, 1 James Cook Drive, Townsville, QLD 4810, Australia. Email: louise.young1@jcu.edu.au

Introduction

The remote geographic setting has been challenging to define and traditionally sits within the concept of rural settings. Le Tourneau[1] reviewed key frameworks and theories for sparsely populated areas and proposed that remote areas worldwide are different from urban areas politically, culturally, socially and economically, and that they could be distinguished from rural areas more broadly. Carson and colleagues[2,3] proposed that sparsely populated areas in higher resourced countries, including Australia, Canada and the United States, are distinct from urban areas as they have the following 8 characteristics: disconnected and distant in reference to isolation; discontinuous, diverse and detailed in reference to the historical origins of settlements and influences of time; and dynamic, dependent and delicate in reference to rapid change and influences of more urban areas. While referring to a framework for human and economic geography, these characteristics help to explain the health needs and social determinants of health that distinguish remote health from rural and urban health, and also highlight that the health of individual remote communities has unique characteristics.

Two key components define remote health: geographical location and the type of health practice required for the unique context of that location.[4] Remote health has been differentiated from rural health in Australia and defined as isolated, with poor service access and a relatively high proportion of Indigenous residents, necessitating different models of care to address such challenges.[5] Furthermore, differences in health outcomes and types of services needed have been identified for different types of remote settlements.[6] Remote communities in Australia are characterised by higher risk factors for poor health, inequitable access to health care, and poor health outcomes.[7] The burden of disease is higher in remote areas of Australia with higher disease burden rates for coronary heart disease, chronic kidney disease, chronic obstructive pulmonary disease, lung cancer, stroke, suicide, self-inflicted injuries and type 2 diabetes associated with increasing remoteness.[8] Definitions for remote health incorporate the key characteristics of the communities involved because of their interdependent relationship with health provision, as Smith et al[5] explain,

> 'remote medical services are usually provided to marginalised populations with poorer health status, different worldviews and cultural understandings of health where it is critical to have a strong understanding of public health and to be able to work as part of a multidisciplinary team'.(p160)

In relation to health workforce, remote has been described as 'locations that are geographically, professionally and personally isolating with limited sophistication of medical and logistic support, limited access to peers, in extreme climatic, political or cross-cultural environments'.[5](p160) With a lack of specialist services in remote towns, rural and remote services rely on primary health care facilities with a broad scope of services but less infrastructure.[8] Remote areas of Australia have the lowest numbers of health professionals per population,[7] and there is a greater reliance on visiting health services.[6] Remote health practice is characterised by smaller integrated teams and less procedural activity with a commensurately greater need for comprehensive population health strategies that acknowledge the idiosyncratic issues related to geographical, demographic, socioeconomic context, services and workforce.[6]

These definitions highlight that health professional education and learning in remote health contexts are different from learning in urban contexts, although there is overlap. Also apparent is that educational strategies and opportunities for remote health practice are often needs driven and the characteristics of remote health may be used to categorise the educational needs of health professionals. Providing health professional education for remote practice is challenging because of the great variability in each location and the resulting differing needs and resources. This scoping review aims to identify undergraduate and graduate health professional education for remote settings, the types of educational strategies implemented and their reported outcomes from an international perspective.

Method

The methodological framework for scoping reviews to identify gaps in the existing literature proposed by Arksey and O'Malley[9] was used to guide this review.

Identifying relevant studies and study selection

A broad search of published literature available in online bibliographic databases was conducted. The institution's senior librarian, in the discipline of health and medicine, guided development of the initial search strategy. Medline, CINAHL, ERIC and PsycInfo databases were searched using variations of the core terms 'teaching', 'distance education', 'rural' and 'remote'. The search terms were applied in combination ('teaching' AND ('distance education' OR 'rural' OR 'remote')) and resulting relevant articles were reviewed for any other MeSH search terms or key words that could be added to the search strategy. The amended search strategy was applied again and the cycle was repeated until no further relevant, additional search terms were identified. This was an iterative process within each database, and also across the selected databases.

The final search (Appendix 1) was conducted and all resulting articles were downloaded to the EndNote[10] software bibliographic management programme. Duplicate titles were removed. The titles and abstracts of remaining articles were screened for relevance to the aim of the scoping review and removed from the EndNote library as appropriate. Inclusion criteria were broadly defined and conceptualised in Table 1.

Articles were excluded from further review based on the following exclusion criteria: article focuses on professionals other than health professionals, geographic setting not defined, geographic setting defined as rural with no remote setting aspects reported (training context, participants or outcomes), outcomes not reported, about continuous professional development without direct application for remote context, full text unavailable online or the article was written in a language other than English.

Full text of remaining articles were reviewed for relevance resulting in a final set of 36 articles for inclusion in the literature review. References for the final set of articles were checked for any citations that warranted further investigation. A forward citation search for articles included in the review was also conducted using the Web of Science database and Google Scholar (where Web of Science yielded no results). Articles identified from the citation searches were included in the review as appropriate. Further studies were sought through the authors' networks in rural training for medical professionals.

Charting, collating and summarising the data

Information about the country setting, training or education reported, study design, participants and key outcomes were extracted into a table (Appendix 2). During the process of charting, it became clear that studies could be categorised according to the main aim of the training, the types of training activities and the types of outcomes measures. Data were summarised in line with the emerging categories, with the purpose for training forming the primary unit of categorisation (or theme).

Findings

A total of 3390 articles were retrieved and downloaded to EndNote on April 3, 2019 (Figure 1). The search was restricted to articles published from 2009 to 2019 as over this time period remote health has been emerging as a distinct concept from rural health. Duplicate articles were removed (n = 386) and the remaining titles and abstracts were screened for relevance to the aim of the review. Eighty-eight articles were reviewed in full and 33 articles were found to be appropriate for inclusion in the review. A further 7 articles were identified for inclusion in the review through citation searches and the authors' networks (reference lists, n = 1; forward citation searches, n = 5; authors' networks, n = 1) giving a total of 40 articles to be included in the review. Some of these additional articles were published prior to 2009 but were included due to their seminal value.

The majority of studies were set in Australia (n = 32) with the remaining studies in Canada (n = 6) and the United States (n = 2; Appendix 2). Studies focused on training for undergraduate health professionals in the disciplines of medicine (n = 22), nursing (n = 5), public health (n = 1), dietetics (n = 1)

Table 1. Conceptual framework for scoping review.

	DESCRIPTION
Inputs	Health profession education/training in geographically isolated settings
Activities	Curriculum, modes/models/practices/strategies of education delivery, medical education, nursing education, pharmacy education, other allied health education, clinical skills, communication skills, internship, mentoring, preceptorship, teacher training, educational technology
Outcomes/impacts	Quality of education (perceptions, achievement level, etc), supervisor effectiveness, workforce outcomes, health service outcomes, health outcomes, community outcomes

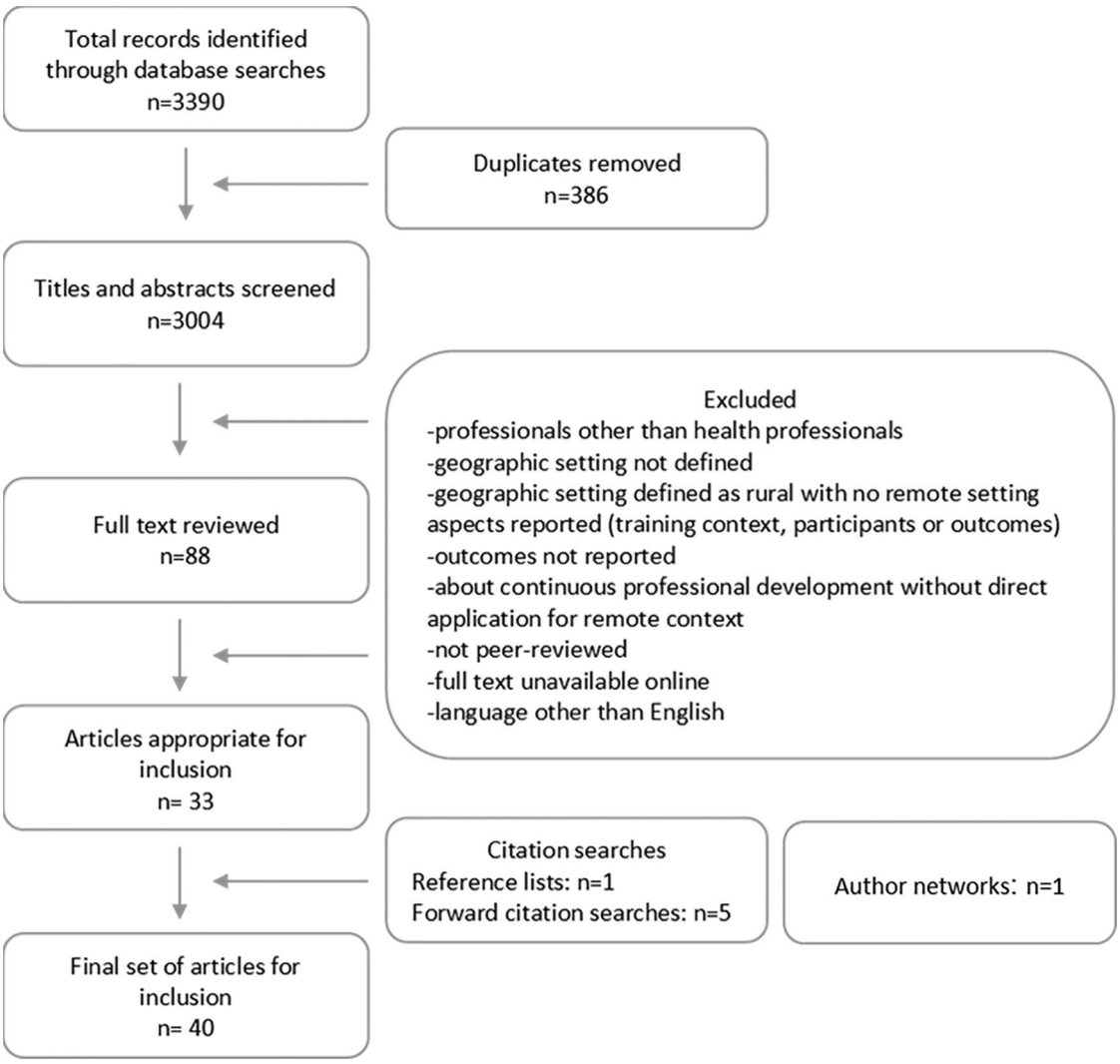

Figure 1. Flow diagram of process for identifying relevant articles for inclusion in the review.

and physiotherapy (n = 1). A further 10 studies were about training for a mixture of health professionals in preparation for working in rural and remote areas, and 1 study focused on training for Aboriginal Health Professionals.

A mixture of study designs were employed in the articles to describe and investigate training programmes (Appendix 2). The majority of studies were programme evaluation studies using a descriptive study design (n = 26) and reported on findings of post-programme questionnaires, and sometimes qualitative components including observations, interviews, focus groups or analysis of existing materials such as students' reflective essays (n = 16). Four of these evaluation studies used a pre/post design to evaluate programme outcomes, and one of these studies also incorporated a further data point at follow-up. Five studies used purely qualitative methods to evaluate the training programme. Seven studies were cohort studies that drew on survey data, datasets containing academic performance, clinical case logs, placement data and other administrative data. Three studies reported on findings from prospective cohort studies. A further 2 studies used a quasi-experimental, pre/post design

that included patient outcomes to evaluate training programmes. Two descriptive studies aimed to investigate aspects of training programmes and employed qualitative methods.

Few studies reported educational training strategies with a sole focus on training in skills or knowledge required for remote practice, for remote health professionals, undergraduate students or postgraduate students. Training strategies for health professionals working, or planning to work, in remote settings (as distinct from the broader rural context) were usually courses of short duration and were described by some authors as continuing education. Studies that reported training of longer duration were usually reported within the context of rural settings, with remote settings acknowledged and forming part of rural settings (ie, 'rural and remote'). Similarly, few studies reported outcomes related specifically to remote settings. Rather, remote outcomes were usually reported within a broader rural context.

Training in rural and remote settings occurred to address the educational needs of health students and health professionals. The purpose of the remote education formed the primary themes for summarising the literature (Table 2). Six primary themes were identified in this scoping review including: (1) cultural competency for working with indigenous cultures in rural and remote areas; (2) instil values of social accountability; (3) rural and remote skills development for the general workforce; (4) remote specialisation; (5) specialist skills required for the remote workforce; and (6) train the trainer model for remote teaching. Although there was some overlapping between themes, the distinctions discussed in the following section provide an overview of the reviewed literature.

Educational purpose of training

Cultural competency for working with indigenous cultures in rural and remote areas. The ability to provide culturally competent care was considered an important feature for practice with indigenous populations in multicultural society. Throughout the reviewed studies, training for undergraduate health students in rural or remote settings aimed to increase cultural awareness through service learning[18,28,30,34] and community immersion experiences of various duration.[11-17, 26] A 7-day cultural immersion service learning experience in an Indigenous community situated in a rurally isolated location involved learning from Indigenous elders, participation in cultural activities, and provision of screening and physical examinations at schools.[11] The experience evoked reflections on privilege, cultural understandings and barriers to health care for community members to raise the cultural awareness of undergraduate nursing students. In addition, short courses that aimed to teach learners specialist skills for remote practice incorporated a focus on health needs of the indigenous population.[39,40,42] Postgraduate programmes included a focus on indigenous health,[36,37,47] for instance, a 24-week placement in primary health care services in remote areas of Australia immersed residential medical officers in remote health practice where they served Indigenous people in their daily practice.[47]

Instil social accountability (desire to address health inequities). Training within rural and remote settings and learning to serve rural and remote populations, reflected the commitment of some institutions to train a workforce with a desire to work in underserved areas and with underserved populations. A key feature of training was immersion experiences in rural and remote communities for service learning or nonclinical exposure to rural and remote community culture. The latter immersion experience was of short duration (1-8 weeks).[12-15] Two studies reported repeated immersion experiences over the undergraduate course. One involved 2 brief nonclinical immersion experiences over time, one in a rural community and the other in a remote community that was followed by clinical placements in rural or remote settings in subsequent years of the course.[16] The other study involved repeated, brief clinical placements in communities over several years.[17]

Rural and remote skills development for the general workforce. Undergraduate clinical placements in rural and remote settings developed rural and remote health competency needed to practice in the general workforce with the additional aim of increasing the rural and remote workforce. Sometimes rural and remote placements formed part of implicit institutional social accountability strategies to train health workforce with a desire to serve underserved populations. Length and number of placements varied falling into 2 main groups: several short-term placements (4-8 weeks to 6 months) over a course[18,20-26]; and longer term placements (almost a full year).[28-35] Placement sites included hospitals and community placements within general practice or other primary health care settings, and were often mandatory rotations over the education course.

For some institutions, immersion experiences formed part of a 'rural pipeline' that included a mixture of strategies such as selection of students from rural backgrounds, early and repeated training in rural areas, curriculum focused on rural and remote health, and postgraduate training pathways to encourage rural careers.[18-21] These studies found that the 'rural pipeline' increased health professionals' intention to practice, or actually practice, in rural and remote areas. Woolley et al[18] found that a 'remote pipeline', involving a remotely based clinical school and a rural generalist pathway, increased the likelihood of early-career remote medical practice.

Longer term undergraduate clinical placements offered students the ability to live and work in rural or remote communities while learning all skills and competencies in these communities – a generalist approach. Some rural/remote immersion experiences involved clinical placements in rural or remote communities for 6 to 12 months.[28-35] Overall, these studies found that immersion experiences gave students insight into living and working in rural and remote communities, enabled students to develop positive community relationships and develop their attitudes towards practice in the rural and remote context, and improved their clinical competence and confidence. Students performed as well as, if not better

Table 2. Educational purpose, strategies and outcomes for health professional education in rural/remote settings.

	EDUCATIONAL PURPOSE	STRATEGIES	OUTCOMES	STUDIES
1 Learning	Cultural competency for working with indigenous cultures in rural and remote areas	Cultural immersion in a minority culture community in an isolated location	• Cultural consciousness development	Alexander-Ruff and Kinion[11]
2 Learning	Instil social accountability (desire to address health inequities)	Brief rural or remote immersion experience	• Positive remote community stakeholder views about the programme	Toussaint and Mak[12]
			• Experience rural, remote and international living • Development of awareness of international, rural and urban health, and community development	Meili et al[13a]
			• Experience rural or remote living • Development of community relationships	Deutchman et al[14a]
			• Majority serve in rural and remain interested in rural practice • Career aspirations, availability of support and personal commitments influence decision to remain in rural practice	Hill et al[15a]
		Repeated brief rural and remote immersion experiences in the same community or different communities over several years	• Experience rural and remote living • Development of community relationships	Mak and Miflin[16]
			• Experience rural and remote living • Development of community relationships and attachment • Positive intention to train or practice in rural/remote location	Young et al[17a]
3 Learning	Rural and remote skills development for the general workforce	A mixture of strategies including selection of students from rural backgrounds, early and repeated training in rural areas, curriculum design and postgraduate training pathways to encourage rural careers	• 'Remote pipeline' strategies more likely to lead to remote workforce	Woolley et al[18]
			• Aspects of the rural pipeline positively influenced rural practice intention	Playford et al,[19a] Walker et al,[20a] Woolley et al[21a]
		Rural and remote service learning: short-term placements where rural and remote learning is considered one of many competencies to be learnt to develop a competent health workforce	• Rural and remote experience more likely to lead to rural workforce	Playford et al[22a]

(Continued)

Table 2. (Continued)

EDUCATIONAL PURPOSE	STRATEGIES	OUTCOMES	STUDIES
		• Academic and clinical skills assessment higher for students with remote placements	Wyatt and Chater[23]
		• Better assessment outcomes associated with rural placements	Johnston et al[24]
		• Mostly positive influence on intention to practice rurally • Rural and remote placements valued as giving hands-on clinical experience	Eley and Baker[25a]
		• Adjustments to include Aboriginal health curriculum needed to prepare students for immersion and early community engagement. • Building of cultural awareness	Hudson and Maar[26a]
	Rural and remote immersion to develop all skills using a generalist approach: longer placements where all skills are learnt in a rural or remote environment	• Better assessment outcomes associated with rural placements	Worley et al[27a]
		• Experience rural and remote living • Development of community relationships • Enhanced understandings of rural/remote practice. • Identified barriers to rural practice: geographic isolation, perception of education and risk.	Roberts et al[28a]
		• Experience rural and remote living • Development of community relationships • Better assessment outcomes associated with rural placements • Improved confidence and competence • Positive community stakeholder views about the programme	Young et al[29a]
		• Satisfaction with programme with some resource and relationship issues • Equivalent assessment grades for rural and urban	Denz-Penhey and Murdoch[30a]
		• Better assessment outcomes associated with rural placements and increased self-efficacy • Equivalent learning experience between larger rural town and smaller rural town settings	Denz-Penhey and Murdoch[31]
		• Equivalent assessment outcomes for rural and urban • Educational equivalence with urban learning in terms of case mix	Wright et al[32a]
		• Equivalent assessment grades achieved at remote and metropolitan placement sites	Condon et al[33]
		• Rural and remote placements enhanced development of personal, professional, cross-cultural and clinical skills	Daly et al[34a]

(Continued)

Table 2. (Continued)

	EDUCATIONAL PURPOSE	STRATEGIES	OUTCOMES	STUDIES
			• Increased intent to work in rural area • No increase in rural workforce	Jamar et al[35]
4 Learning	Remote specialisation–developing a remote workforce as a discipline	Remote specialist skills	• Facilitated learning of skills for remote area settings. • Development of remote health practice skills	Jeffery et al,[36] Lenthall et al[37]
			• Remote medical knowledge and skills development • Retention of medical workforce in rural or remote areas	Wearne et al[38]
5 Learning	Specialist skills for remote workforce–generalism	Specialist skill learning: face to face workshops, online, simulation, self-directed component, visits to health facility sites	• Discipline: maternal care skills for nurses • Increased confidence and competence	Belton et al[39]
			• Discipline: cancer care for Aboriginal Health Professionals • Increased confidence and competence	Croager et al[40a]
			• Discipline: mental health emergency care for health professionals • Increased confidence and competence	Ellis and Philip[41a]
			• Discipline: diabetes care • Increased confidence and competence	Schoen et al[42a]
			• Discipline: pulmonary rehabilitation for health professionals • Increased confidence and competence; Patient outcomes improved	Johnston et al,[43a,44]
			• Discipline: emergency care skills for health professionals • Increased confidence and competence	Martin et al[45a]
			• Discipline: palliative care for health professionals • Increased confidence and competence	Ray et al[46]
			• Discipline: population health for doctors • Increased confidence and competence • Retention in medically underserved practice	Hofer et al[47]
			• Discipline: acute care for doctors • Increased confidence and competence	Willett et al[48a]
			• Discipline: management of alcohol abuse • Increased confidence and competence • Barriers to implementing knowledge include relationships and building rapport	Kennedy et al[49a]
6 Teaching	Train the Trainer Model for Remote teaching	Virtual workshops, online, face to face, self-directed component	• Increased confidence and competence for teaching	Delver et al[50a]

[a]Outcomes for remote setting reported within rural setting more broadly.

than, their urban peers. Learning experiences or assessment grades between rural and urban settings were reported to be at least equivalent.[23,24,27,29-35] Rural and remote training delivered educational experiences of comparable standard to urban training in tertiary hospitals as well as encouraging rural and remote workforce careers.

Remote specialisation – developing a remote workforce as a discipline. The establishment of programmes specifically for remote health highlighted the unique needs of health professionals working in remote settings.[36-38] These programmes represented an ongoing commitment from institutions to support health professionals working in remote areas. One programme was a postgraduate course that included clinical training and content for specific professions, with attainment of various postgraduate qualifications in remote health.[36,37] Strategies for assessing clinical competencies that reflected the remote area setting were important for the learning experience.[36] Another programme consisted of distance education, supervision by a remote health professional mentor, clinical teaching visits and face-to-face workshops over 12 months.[38] These programmes aimed to increase the remote health workforce and improve retention in these areas. The underlying premise was that if health workers felt competent, they would be more likely to stay working in remote locations.

Specialist skills required for remote workforce. Generalism is a feature of remote area practice and several studies successfully provided training in specialist knowledge skills for health professionals working in rural and remote areas.[39-50] Training in maternal, diabetes and acute care, for instance, was provided through short courses delivered online, or face to face in regional or rural settings, and used a variety of teaching methods including simulation.

Train the trainer model for remote teaching. Only one study outlined the train the trainer approach to education programmes in remote areas as a strategy to provide health staff with skills to teach and train their remote health workforce. Few papers described teaching approaches, methods or resources used in remote teaching. Descriptions of curriculum were mostly superficial with some exceptions.[11,14,25,37,42,43,45,48,50] There were no descriptions of what was done differently for education and training in remote settings compared with rural settings, although one study described technological challenges of delivering educational materials to Aboriginal communities where students were placed.[26]

Remote teaching approaches used online, face to face, workshops, didactic sessions, clinical sessions, case-based learning, mobile simulation lab, teletutorials, video-based discussions, and simulated patients. With advances in digital technology, there are increasing opportunities for more synchronous online teaching which overcomes the tyranny of distance and potentially making remote training even more attractive.

Training was found to cover required content and skills in remote education as a number of studies reported equivalence with training experienced by urban counterparts.[23,24,27,29-35] Methods used were also comparable and involved virtual workshops, readings, workbooks, interactive digital resources, podcasts, discussion board, personal digital assistant, and telephone/email support.

Summary. Overall, a core element of training undergraduate and postgraduate health professionals for remote practice was immersion and experience within rural and remote communities, with supporting curriculum delivered on-campus and during immersion experiences. Learning outcomes focused not only on clinical skills but also on distilling a 'consciousness' of rural and remote practice. Training exposed learners to the remote context where they experienced remote living and integrated an appreciation for social factors that affected the health of rural and remote populations. The quality of training was not secondary to this intent. Many studies reported assessment outcomes from learners trained in rural and remote areas that were at least equivalent to outcomes achieved by learners trained in urban and metropolitan areas. Studies also reported on equivalent types of learning, for example, case mixes between rural and urban placement experiences.

For practising rural and remote health professionals, and those preparing to serve in rural and remote communities, short courses that included consideration for appropriate delivery methods and support in the rural and remote context appeared to be effective. Notably, remote health was acknowledged as a discipline in its own right through training programmes that were invested primarily in the development of remote health professionals. A lack of train the trainer educational programmes was an important finding of this review, especially given the essential role of rural and remote health professionals as mentors and teachers. There was also a lack of detailed descriptions of the education sessions to assist others to replicate or develop comparable training approaches.

Discussion

This scoping review summarised current literature on health profession education for remote settings, the strategies implemented and their effectiveness. Overall, a small number of studies were identified for inclusion in this review. Of the included studies, few provided detailed descriptions about education strategies and the activities involved or reported separately on outcomes for learners who experienced education in remote settings. Historical challenges in differentiating remote health from rural health are ongoing and have resulted in remote health being aggregated with rural health. This has led to a lack of literature to inform education for health professionals in remote areas and a lack of differentiation of education and training success in remote areas. The role of health profession education institutions and various health bodies in training a workforce for remote settings requires attention and research.

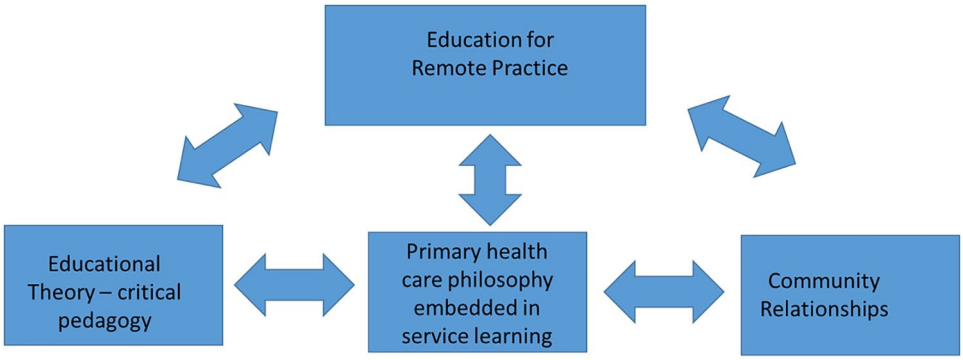

Figure 2. Proposed adaption of Reid's pedagogy of rural health for the remote health context.

The concept of remote health as a distinct discipline has emerged over the past two decades as its differences from rural health have become recognised. Educational strategies have mirrored this evolution, although we found that many studies still do not differentiate between rural and remote settings. In earlier studies, the rural context was seen as a component of the general undergraduate health professional curriculum provided in urban environments which was taught separately with short placements in rural or remote areas to gain 'rural skills'. In Australia, the development of Rural Clinical Schools and University Departments of Rural Health (UDRHs) enabled students to have rural and remote placements as part of urban training not only to provide rural and remote skills but to provide an educational experience that would encourage future rural and remote practice, and ameliorate workforce shortages.

More recently, longer term rural and remote immersion placements were established with the underlying premise that rural and remote areas were potentially better training environments due to the integration and variety provided in these contexts offering the opportunity for all clinical skills to be learnt in this context.[51] Studies investigating educational and professional outcomes of rural and remote learning suggest that assessment outcomes and self-efficacy may be enhanced when compared with urban programmes.[23,24,27,29-35] Remote practice may develop students' sense of agency because they are valued as part of the team and are not superfluous, and merely competing with others for access to patients for their own learning.[52]

With the establishment of remote medicine as a distinct postgraduate specialty in its own right came the development of training specifically to prepare health professionals to work in remote areas. Australia is addressing these issues by establishment and recognition of the Australian College of Rural and Remote Medicine (ACRRM) as a specialist medical college focussing on the discipline of rural medicine and founding CRANAplus as the professional body for the remote and isolated health workforce of Australia. The need for rural and remote practice specific skills generalist skills with the addition of specialist skills, in order to meet the needs of remote populations resulted in a number of programmes to provide these specialist skills to graduates working in rural and remote locations, such as the Allied Health Rural Generalist programme, James Cook University (https://www.jcu.edu.au/division-of-tropical-health-and-medicine/research/rural-generalist-programme-rgp), the Queensland Rural Generalist Pathway (https://ruralgeneralist.qld.gov.au/) and the Remote Vocational Training Scheme in Australia (https://rvts.org.au/).

A 'critical pedagogy of place' has been proposed as an educational theory to underpin rural practice due to the importance of context for learning and the sociological imperatives of social justice which become apparent when living in rural areas.[52] The features of rurality that Reid[52] lists as providing the rural educational perspective are even more marked in remote environments. Due to the distinct context of remote practice compared with rural, and the more obvious nature of socioeconomic disadvantage in remote areas, it follows that a distinct remote pedagogy is likely to underlie the transformative learning experiences that have been described as a result of learning in remote settings. Studies suggest that even brief remote placements provide cultural and socially accountable transformative learning experiences which participants then take with them to their future working environments.[53-55] We therefore propose that education for remote practice comprises a unique educational context that provides a transformative educational experience due to the combination of critical pedagogy, the primary health care philosophy of service learning in rural and remote areas and the relationships formed in remote communities (Figure 2).

Transformative learning experiences, as described by Mezirow,[56] involve disorienting dilemmas which challenge the learner's thinking. The remote learning context challenges traditional or long-held beliefs by individuals, which through self-reflection, allow them to use their experiences to change their way of seeing the world. Relationships are essential for transformative learning, the development of social accountability[57,58] and cultural competence and the rich social capital[52] in remote communities provides the crucial components for the development of these values; which are critical for effective and successful remote health practice. Immersion in the community and learning in context are important components of remote learning and often develop a sense of professional identity in learners leading to their development as change agents who advocate for their patients and communities demanding adequate funding, services and infrastructure.[59,60]

Many of the training programmes in this review have been implemented in remote areas to train health professionals to meet a specific health need. There were symbiotic benefits for both the learners and the communities where they were placed.[61] Learners were receiving education but were located within a remote town which benefitted from health professionals being able to train or upskill locally. It was very much a case of situated learning in a community of practice.[62] For the learner, this experience develops not only professional identity but personal identity and reveals the importance of 'place' in health education. Learning health skills in an environment where the context is explicit develops an awareness of 'place' or context resulting in an ability to adapt in any context and increased professional or clinical effectiveness.[54] The assumptions underlying the purposes and activities in the studies in this review supported and provided additional evidence of these concepts and theoretical approach.

Future Research

Specific remote education outcomes were not clearly articulated in many articles, with most articles reporting more generally about rural outcomes and relying instead on self-reported competency or satisfaction. Future research needs to include a description of the curricula used, inclusion of more rigorous and successful teaching and learning strategies, and evaluation of outcomes for and within the remote setting. More urban-remote education outcome comparisons are needed as there is still a widely held belief that learning in remote settings is inferior to metropolitan health training. However, this view may be dismissed as geographical narcissism which maintains that health professionals can only be trained in urban locations.[63] Numerous studies with mainly undergraduate medical students have shown that rural and remote training outcomes can be equivalent to urban training, with some evidence that remote training outcomes are at least equivalent to urban training.[23,24,27,29-35]

Overall, articles were generally descriptive and superficial with limited detail to allow replication of the education programme. While articles have reported successful learning, it is not always clear how and why learning occurred and as a result of what type of intervention. Wiese et al[64] theorised on the interactions of contextual factors with underlying processes and mechanisms to shape supervised workplace learning in postgraduate medical education. Identifying the interpersonal, local and systems level learning outcomes for undergraduate students in remote settings, and understanding the processes and mechanisms that shape these outcomes, could further inform strategies that aim to develop the rural and remote workforce.

Strengths and Limitations

This review was based on a comprehensive search of the peer-reviewed literature available in online bibliographic databases. A librarian assisted with development of the search strategy. Training programmes were not limited to one health profession with undergraduate and postgraduate medicine, nursing, physiotherapy, Aboriginal Health and public health participants involved. It is possible that relevant studies may have been missed during the search due to different terminology used in different countries and disciplines. Furthermore, the search aimed to capture descriptions of curriculum and education strategies; therefore, 'curriculum' (and related terms) was a requirement for the search strategy. This may have resulted in studies that included remote participants or reported on remote outcomes of education strategies being missed; however, this was a secondary focus of the review.

The terms rural and remote were often used interchangeably in the literature. A definition for remote settings was developed during the review of the search results based on the Australian experience. However, this was difficult to implement when considering the context of other countries. Further search terms for remote areas that capture differences between countries may have retrieved more articles. Many studies did not define by population, location or services what was meant by 'remote' or 'rural'. Moreover, it was not always clear if studies included participants who undertook remote training, and very few studies reported primarily on outcomes related to the remote setting. It was most often the case that studies reported rural outcomes, though there were some studies that focused on remote outcomes. This was also the case for studies set in low-resource settings. These studies were not included in the review due to an inability to determine whether the training included a remote context or if remote participants were included in the study or remote outcomes reported.

Conclusion

Remote health professional education has developed over time as the value of training in rural and remote contexts has been demonstrated and the need for additional skills in remote areas has been established, particularly for the attraction and retention of a remote workforce. Place based education teaches the importance of context and the need to adapt. Education for remote practice uses critical pedagogy to develop a sense of agency and social accountability, delivers primary health care through service learning and develops an awareness of context or place which is transformative. In addition to the extensive professional competencies developed through remote learning, the development of relationships in communities contributes not only to professional identity but also to personal identity and the development of values. Remote health professional education and training is a valuable and transformative learning experience.

Acknowledgements

We acknowledge the institution's senior librarian Mr Stephen Anderson for his expert guidance in developing a comprehensive search strategy for this review.

Author Contributions

CR – review conception, developed search parameters, data analysis and synthesis, drafted and edited paper.
KJ – literature search, data analysis, drafted and edited paper.
LY – developed search parameters, data analysis and synthesis, drafted and edited paper.

Supplemental Material

Supplemental material is available for this article online.

ORCID iD

Karen Johnston https://orcid.org/0000-0002-0477-4666

REFERENCES

1. Le Tourneau F-M. Sparsely populated regions as a specific geographical environment. *J Rural Stud*. 2020;75:70-79. doi:10.1016/j.jrurstud.2019.12.012.
2. Carson DB. Skilled labour migration flows to Australia's Northern Territory 2001–2006: beyond periphery. *Austral J Labour Econ*. 2011;14:15-33.
3. Carson D, Ensign PC, Rasmussen RO, Taylor A. Perspectives on 'demography at the edge'. In: Carson D, Rasmussen RO, Ensign P, Huskey L, Taylor A, eds. *Demography at the Edge: Remote Human Populations in Developed Nations*. Farnham, UK: Ashgate; 2011:3-20. https://www.taylorfrancis.com/books/e/9781315576480/chapters/10.4324/9781315576480-8. Accessed May 14, 2020.
4. Wakerman J. Defining remote health. *Aust J Rural Health*. 2004;12:210-214.
5. Smith JD, Margolis SA, Ayton J, et al. Defining remote medical practice: a consensus viewpoint of medical practitioners working and teaching in remote practice. *MJA*. 2009;188:159-161. doi:10.5694/j.1326-5377.2008.tb01561.x.
6. Wakerman J, Bourke L, Humphreys JS, Taylor J. Is remote health different to rural health? *Rural Remote Health*. 2017;17:3832. http://www.rrh.org.au. Accessed April 10, 2019.
7. National Rural Health Alliance Inc. *The Health of People Living in Remote Australia*. National Rural Health Alliance. https://www.ruralhealth.org.au/factsheets/thumbs. Updated June 23, 2016. Accessed May 14, 2020.
8. Australian Institute of Health and Welfare. *Rural and Remote Health*. Canberra, ACT, Australia: AIHW; 2019. https://www.aihw.gov.au/reports/rural-remote-australians/rural-remote-health. Accessed May 14, 2020.
9. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol*. 2005;8:19-32. doi:10.1080/1364557032000119616.
10. Clarivate Analytics. EndNote X9; 2020. https://endnote.com/.
11. Alexander-Ruff JH, Kinion E. Engaging nursing students in a rural Native American community to facilitate cultural consciousness. *J Community Health Nurs*. 2018;35:196-206. doi:10.1080/07370016.2018.1516423.
12. Toussaint S, Mak DB. 'Even if we get one back here, it's worth it'.: evaluation of an Australian Remote Area Health Placement Program. *Rural Remote Health*. 2010;10:1546. http://www.rrh.org.au. Accessed April 10, 2019.
13. Meili R, Fuller D, Lydiate J. Teaching social accountability by making the links: qualitative evaluation of student experiences in a service-learning project. *Med Teach*. 2011;33:659-666. doi:10.3109/0142159X.2010.530308.
14. Deutchman ME, Nearing K, Baumgarten B, Westfall JM. Interdisciplinary rural immersion week. *Rural Remote Health*. 2012;12:2045. http://www.rrh.org.au. Accessed April 10, 2019.
15. Hill ME, Raftis D, Wakewich P. Strengthening the rural dietetics workforce: examining early effects of the Northern Ontario Dietetic Internship Program on recruitment and retention. *Rural Remote Health*. 2017;17:4035. http://www.rrh.org.au. Accessed May 10, 2020.
16. Mak DB, Miflin B. Living and working with the people of 'the bush': a foundation for rural and remote clinical placements in undergraduate medical education. *Med Teach*. 2012;34:e603-e610. doi:10.3109/0142159X.2012.670326.
17. Young L, Kent L, Walters L. The John Flynn Placement Program: evidence for repeated rural exposure for medical students. *Aust J Rural Health*. 2011;19:147-153. doi:10.1111/j.1440-1584.2011.01201.x.
18. Woolley T, Sen Gupta T, Bellei M. Predictors of remote practice location in the first seven cohorts of James Cook University MBBS graduates. *Rural Remote Health*. 2017;17:3992. http://www.rrh.org.au. Accessed April 10, 2019.
19. Playford D, Wheatland B, Larson A. Does teaching an entire nursing degree rurally have more workforce impact than rural placements. *Contemp Nurse*. 2010;35:68-76. doi:10.5172/conu.2010.35.1.068.
20. Walker JH, Dewitt DE, Pallant JF, Cunningham CE. Rural origin plus a rural clinical school placement is a significant predictor of medical students' intentions to practice rurally: a multi-university study. *Rural Remote Health*. 2012;12:1908. http://www.rrh.org.au. Accessed April 10, 2019.
21. Woolley T, Sen Gupta T, Murray R. James Cook University's decentralised medical training model: an important part of the rural workforce pipeline in northern Australia. *Rural Remote Health*. 2016;16:3611. http://www.rrh.org.au. Accessed April 10, 2019.
22. Playford D˙E, Nicholson A, Riley GJ, Puddey IB. Longitudinal rural clerkships: increased likelihood of more remote rural medical practice following graduation. *BMC Med Educ*. 2015;15:55. doi:10.1186/s12909-015.
23. Wyatt JE, Chater AB. Academic performance of third-year medical students learning in rural settings. *Aust J Rural Health*. 2018;26:265-272. doi:10.1111/ajr.12414.
24. Johnston C, Newstead C, Sanderson M, Wakely L, Osmotherly P. The changing landscape of physiotherapy student clinical placements: an exploration of geographical distribution and student performance across settings. *Aust J Rural Health*. 2017;25:85-93. doi:10.1111/ajr.12302.
25. Eley D, Baker P. The value of a rural medicine rotation on encouraging students toward a rural career: clear benefits from the RUSC program. *Teach Learn Med*. 2009;21:220-224. doi:10.1080/10401330903018468.
26. Hudson GL, Maar M. Faculty analysis of distributed medical education in Northern Canadian Aboriginal communities. *Rural Remote Health*. 2014;14:2664. http://www.rrh.org.au. Accessed May 10, 2020.
27. Worley P, Esterman A, Prideaux D. Learning in practice. *BMJ*. 2004;328:207-209.
28. Roberts C, Daly M, Kumar K, Perkins D, Richards D, Garne D. A longitudinal integrated placement and medical students' intentions to practise rurally. *Med Educ*. 2012;46:179-191. doi:10.1111/j.1365-2923.2011.04102.x.
29. Young L, Rego P, Peterson R. Clinical location and student learning: outcomes from the LCAP program in Queensland, Australia. *Teach Learn Med*. 2008;20:261-266. doi:10.1080/10401330802199583.
30. Denz-Penhey H, Murdoch JC. 'It's really, really good, but it could be a lot better': qualitative evaluation of a Rural Clinical School, four years on. *Med Teach*. 2009;31:e443-e448. doi:10.3109/01421590902849537.
31. Denz-Penhey H, Murdoch JC. Is small beautiful? Student performance and perceptions of their experience at larger and smaller sites in rural and remote longitudinal integrated clerkships in the Rural Clinical School of Western Australia. *Rural Remote Health*. 2010;10:1470. http://www.rrh.org.au. Accessed April 10, 2019.
32. Wright HM, Maley MAL, Playford DE, Nicol P, Evans SF. Paediatric case mix in a rural clinical school is relevant to future practice. *BMC Med Educ*. 2017;17:237. doi:10.1186/s12909-017-1082-1.
33. Condon BP, Worley PS, Condon JR, Prideaux DJ. Student academic performance in rural clinical schools: the impact of cohort size and competition. *Med Teach*. 2017;39:262-268. doi:10.1080/0142159X.2017.1270430.
34. Daly M, Perkins D, Kumar K, Roberts C, Moore M. What factors in rural and remote extended clinical placements may contribute to preparedness for practice from the perspective of students and clinicians. *Med Teach*. 2013;35:900-907. doi :10.3109/0142159X.2013.820274.
35. Jamar E, Newbury J, Mills D. Early career location of University of Adelaide rural cohort medical students. *Rural Remote Health*. 2014;14:2592. http://www.rrh.org.au. Accessed April 10, 2019.
36. Jeffrey CA, Mitchell ML, Henderson A, et al. The value of best-practice guidelines for OSCEs in a postgraduate program in an Australian remote area setting. *Rural Remote Health*. 2014;14:2469. http://www.rrh.org.au. Accessed April 10, 2019.
37. Lenthall S, Wakerman J, Knight S. The frontline and the ivory tower: a case study of service and professional-driven curriculum. *Aust J Rural Health*. 2009;17:129-133.
38. Wearne S, Giddings P, McLaren J, Gargan C. Where are they now? The career paths of the Remote Vocational Training Scheme registrars. *Aust Fam Physician*. 2010;39:53-56.
39. Belton S, Campbell M, Foxley S, et al. Evaluating the long-term effectiveness of the Maternity Emergency Care course in remote Australia. *Women Birth*. 2010;23:60-66. doi:10.1016/j.wombi.2009.08.004.
40. Croager EJ, Eades T, Pratt IS, Slevin T. Impact of a short, culturally relevant training course on cancer knowledge and confidence in Western Australia's Aboriginal Health Professionals. *Aust N Z J Public Health*. 2010;34:S76-S79. doi:10.1111/j.1753-6405.2010.00558.x.
41. Ellis IK, Philip T. Improving the skills of rural and remote generalists to manage mental health emergencies. *Rural Remote Health*. 2010;10:1503. http://www.rrh.org.au. Accessed April 10, 2019.
42. Schoen DE, Gausia K, Glance DG, Thompson SC. Improving rural and remote practitioners' knowledge of the diabetic foot: findings from an educational intervention. *J Foot Ankle Res*. 2016;9:26. doi:10.1186/s13047-016-0157-2.
43. Johnston CL, Maxwell LJ, Boyle E, Maguire GP, Alison JA. Improving chronic lung disease management in rural and remote Australia: the Breathe Easy Walk Easy programme. *Respirology*. 2013;18:161-169. doi:10.1111/j.1440-1843.2012.02269.x.
44. Johnston CL, Maxwell LJ, Maguire GP, Alison JA. Does delivery of a training program for healthcare professionals increase access to pulmonary rehabilitation and improve outcomes for people with chronic lung disease in rural and remote Australia. *Aust Health Rev*. 2014;38:387-395. doi:10.1071/AH14009.
45. Martin D, Bekiaris B, Hansen G. Mobile emergency simulation training for rural health providers. *Rural Remote Health*. 2017;17:4057. http://www.rrh.org.au. Accessed April 10, 2019.
46. Ray RA, Fried O, Lindsay D. Palliative care professional education via video conference builds confidence to deliver palliative care in rural and remote locations. *BMC Health Serv Res*. 2014;14:272. http://www.biomedcentral.com/1472-6963/14/272. Accessed April 10, 2019.
47. Hofer A, Parker J, Atkinson D, Moore S, Reeve C, Mak DB. Prevocational exposure to public health in the Kimberley: a pathway to rural, remote and public health practice. *Aust J Rural Health*. 2014;22:75-79. doi:10.1111/ajr.12089.

48. Willett TG, Kirlew M, Cardinal P, Karas P. An evaluation of the Acute Critical Events Simulation (ACES) course for family medicine residents. *Can J Rural Med*. 2011;16:89-95.
49. Kennedy AJ, Mellor D, McCabe MP, et al. Training and experience of nurses in responding to alcohol misuse in rural communities. *Public Health Nurs*. 2013;30:332-342. doi:10.1111/phn.12029.
50. Delver H, Jackson W, Lee S, Palacios M. FM POD: an evidence-based blended teaching skills program for rural preceptors. *Fam Med*. 2014;46:369-377.
51. Worley PS, Prideaux DJ, Strasser RP, Silagy CA, Magarey JA. Why we should teach undergraduate medical students in rural communities. *MJA*. 2000;172:615-617. doi:10.5694/j.1326-5377.2000.tb124131.x.
52. Reid SJ. Pedagogy for rural health. *Educ Health*. 2011;24:536.
53. Reid SJY. *Education for Rural Medical Practice* [PhD thesis]. Durban, South Africa: University of KwaZulu-Natal; 2010. https://researchspace.ukzn.ac.za/handle/10413/3951. Accessed February 22, 2020.
54. Ross BM, Daynard K, Greenwood D. Medicine for somewhere: the emergence of place in medical education. *Educ Res Rev*. 2014;9:1250-1265.
55. Strasser R, Neusy AJ. Context counts: training health workers in and for rural and remote areas. *Bull World Health Organ*. 2010;88:777-782. doi:10.2471/BLT.09.072462.
56. Mezirow J. A critical theory of adult learning and education. *Adult Educ Q*. 1981;32:3-24. doi:10.1177/074171368103200101.
57. Worley P. Relationships: a new way to analyse community-based medical education? (Part one). *Educ Health (Abingdon)*. 2002;15:117-128. doi:10.1080/13576280210133062.
58. Strasser R. Community engagement: a key to successful rural clinical education. *Rural Remote Health*. 2010;10:1543. http://www.rrh.org.au. Accessed February 22, 2020.
59. Murray RB, Larkins S, Russell H, Ewen S, Prideaux D. Medical schools as agents of change: socially accountable medical education. *MJA*. 2012;196:653-653. doi:10.5694/mja11.11473.
60. Ross BM. Critical pedagogy as a means to achieving social accountability in medical education. *Int J Crit Pedag*. 2015;6:859. http://libjournal.uncg.edu/ijcp/article/view/859/857. Accessed February 22, 2020.
61. Prideaux D, Worley P, Bligh J. Symbiosis: a new model for clinical education. *Clinteach*. 2007;4:209-212. doi:10.1111/j.1743-498X.2007.00188.
62. Lave J, Wenger E. *Situated Learning: Legitimate Peripheral Participation*. Cambridge, UK: Cambridge University Press; 1991.
63. Fors M. Geographical narcissism in psychotherapy: countermapping urban assumptions about power, space, and time. *Psychoanal Psychol*. 2018;35:446-453. doi:10.1037/pap0000179.
64. Wiese A, Kilty C, Bennett D. Supervised workplace learning in postgraduate training: a realist synthesis. *Med Ed*. 2018;52:951-969. doi:10.1111/medu.13655.