

Where do rural family medicine residents in Canada train?

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Abstract

Objective To report on contextual variance in the distributed rural family medicine residency programs of 3 Canadian medical schools.

Design A constructivist grounded theory methodology was employed.

Setting Rural and remote postgraduate family medicine programs at the University of Alberta, the University of British Columbia, and the University of Calgary.

Participants Twenty-six family practice residents were interviewed, providing descriptions of 27 different rural sites and 10 regional sites.

Methods Interviews were audiorecorded, transcribed verbatim, and thematically analyzed.

Main findings Participants differentiated between main campus academic health science centres; regional referral hub sites; and smaller, rural, and more remote community sites. Participants described major differences between sites in terms of patient, practice, educational, physical, institutional, and social factors. The differences between training sites included variations in learning opportunities; physical challenges related to weather, distance, and travel; and the social opportunities offered. There were also differences in how residents perceived their training sites, both in terms of what they noticed and how they interpreted their observations and experiences. Although there were contextual differences between regional sites, those differences were a lot less than between different smaller rural and remote sites. These differences shaped the learning opportunities available to residents and influenced their well-being.

Conclusion Although there may be some similarities between distributed training sites, each training context presents unique challenges and opportunities for the family medicine residents placed there. More attention to the specific affordances of different training contexts is required.

Editor's key points

- ▶ Distributed training sites for family medicine residents can differ in many critical ways. Family medicine residents found that regional and rural communities differed from their main campus academic health science centres in several ways. Regional sites, although similar to academic health science centres in their role as regional referral hubs, often had no non-family medicine specialty senior residents or fellows on site. Rural sites were more diverse: they had few or no non-family medicine specialists, no hospital or limited hospital facilities, and little or no investigative capabilities.
- ▶ The differences between regional sites tended to be less than between rural and remote sites. Distinctions between training sites included variations in learning opportunities, physical challenges related to environment and travel, and the social opportunities offered.
- ▶ Different family medicine residents may experience the same site differently, both in terms of what is apparent to them and in terms of what they learn from those experiences.
- ▶ A more contextually engaged approach to distributed medical education can inform program design, site selection and matching, and learning opportunities, all of which can lead to more meaningful resident professional development and education.

Points de repère du rédacteur

► Les sites de formation répartis pour les résidents en médecine familiale peuvent différer de nombreuses façons déterminantes. Les résidents en médecine familiale ont signalé que les communautés régionales et rurales différaient de plusieurs façons des centres universitaires des sciences de la santé sur les campus principaux. Les sites régionaux, bien que semblables aux centres universitaires des sciences de la santé en ce qui concerne leur rôle de centre d'aiguillage, n'avaient souvent pas sur place de résidents seniors ou de boursiers dans des spécialités autres que la médecine familiale. Les sites ruraux étaient plus diversifiés: ils n'avaient que peu ou pas de spécialistes autres qu'en médecine familiale, aucun hôpital ou peu d'installations hospitalières, et peu de capacités d'investigation ou aucune.

► Les différences entre les sites régionaux avaient tendance à être moins grandes que celles observées entre les sites ruraux et éloignés. Parmi les distinctions entre les sites de formation figuraient des variations dans les possibilités d'apprentissage, les difficultés physiques liées à l'environnement et aux déplacements, et les occasions sociales offertes.

► D'un résident en médecine familiale à l'autre, l'expérience d'un même site peut être différente, tant sur le plan de leurs observations que sur celui de l'apprentissage tiré de ces expériences.

► La conception du programme, le choix des sites et le jumelage, de même que les possibilités d'apprentissage, devraient reposer sur une approche plus contextuelle de la formation médicale hors les murs, de sorte que tous ces éléments puissent générer une éducation et un développement professionnel plus significatifs pour les résidents.

Où sont formés les résidents en médecine familiale rurale au Canada?

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Résumé

Objectif Présenter un rapport des variations contextuelles dans les programmes de résidence hors les murs en médecine familiale rurale de 3 facultés de médecine canadiennes.

Type d'étude Une méthodologie de théorisation ancrée constructiviste a été utilisée.

Contexte Les programmes postdoctoraux de médecine familiale rurale et éloignée à l'Université de l'Alberta, à l'Université de la Colombie-Britannique et à l'Université de Calgary.

Participants Une entrevue a été menée auprès de 26 résidents en pratique familiale visant à décrire 27 sites ruraux et 10 sites régionaux différents.

Méthodes Les entrevues ont fait l'objet d'un enregistrement sonore, d'une transcription verbatim et d'une analyse thématique.

Principales constatations Les participants ont fait la distinction entre les centres universitaires des sciences de la santé sur les campus principaux, les sites régionaux jouant le rôle de centres d'aiguillage, et les sites communautaires plus petits, ruraux et plus éloignés. Les participants ont décrit des différences importantes d'un site à l'autre sur les plans suivants: les patients, la pratique, et les facteurs éducationnels, physiques, institutionnels et sociaux. Parmi les différences entre les sites de formation figuraient des variations dans les possibilités d'apprentissage; des difficultés physiques liées à la météo, à la distance et aux déplacements; et les possibilités sociales offertes. Il y avait aussi des différences dans la façon dont les résidents avaient perçu leurs sites de formation, tant sur le plan de leurs observations que sur leur façon dont ils avaient interprété leurs observations et leurs expériences. Même s'il y avait des différences contextuelles entre les sites régionaux, ces différences étaient beaucoup moins importantes que celles trouvées entre les divers sites plus petits, ruraux et éloignés. Ces différences ont façonné les possibilités d'apprentissage accessibles aux résidents et ont influé sur le bien-être de ces derniers.

Conclusion Même s'il existe certaines similitudes entre les sites de formation hors les murs, chaque contexte de formation présente des défis et des possibilités uniques aux résidents en médecine familiale qui y sont affectés. Il est nécessaire d'accorder plus d'attention aux possibilités spécifiques offertes par différents contextes de formation.

Generalist family physicians in small towns, rural communities, and remote regions in Canada, where non-family physician specialists are few and far between, play an important role in filling critical service gaps.¹⁻⁴ The number of family medicine (FM) training sites in Canada has increased threefold in the past 2 decades and the number of rural FM positions has grown fourfold in the same time period.² This has both increased capacity for FM training and helped address rural work force needs.⁵ Many Canadian FM residency programs are now based at 1 or more regional hubs, where residents complete core rotations in specialties such as surgery and internal medicine. Each of these regional hubs has a number of associated smaller sites where residents train in rural FM settings.⁶ These smaller sites may be within a 30-minute drive of a regional centre or they may be many hours away by road or air. Residents matched to these regional programs split their time fairly evenly between their regional centre and the smaller rural sites.

This diversity of training locations can present challenges as well as opportunities,⁷ and the characteristics of any given site contribute to training outcomes.⁸ However, differences between sites tend to be downplayed, disregarded, or ignored in the drive to demonstrate comparability of resident experiences. This means that relatively little is known about the differences in training opportunities between distributed FM training sites.

To better understand these differences, we conducted a study to explore residents' perceptions of regional and rural training contextual variance at 3 Canadian medical schools. In designing the study, we drew on Ellaway and Bates' 6 patterns of clinical training contexts: patient, physical, practice, educational, institutional, and social.⁸ The current study, as part of a broader study of clinical training contexts, was designed to answer 2 research questions:

- How do FM rural program training sites differ within and across the 3 western Canadian FM rural residency programs?
- How do residents' perceptions of their training sites differ across the 3 western Canadian FM rural residency programs?

— Methods —

We employed constructivist grounded theory,^{9,10} using sensitizing concepts¹¹ of realist inquiry¹² (to allow us to focus on contextual issues) and interpretive phenomenological analysis¹³ (to allow us to focus on stakeholder perceptions).

Study context

The study was conducted at 3 medical schools in Canada with large and diverse rural training programs: the University of Alberta (UA) in Edmonton, the University of British Columbia (UBC) in Vancouver, and the University

of Calgary (UC) in Alberta. Family medicine residents in these programs match to a specific regional site and rotate through affiliated rural sites. In Alberta, all rural program residents match to a regional site and then move to smaller rural sites. At UBC, residents spend most of their time at 1 rural site and then rotate back to a regional centre for some core rotations. However, these programs have very few residents; most are based at regional sites.

This study was approved by the UA Health Research Ethics Board, the UBC Behavioural Research Ethics Board, and the UC Conjoint Health Research Ethics Board.

Researchers

The study team included experienced qualitative researchers (R.H.E., J.B., W.H.), family physicians (J.B., M.T.), and physician leaders (M.T., R.K.). Interviews were conducted by J.B. Transcripts were analyzed by J.B., R.H.E., and W.H. Findings and interpretations were discussed among the whole study team.

Participants

We conducted individual interviews with a convenience sample of first- and second-year FM residents studying in rural postgraduate FM training programs. We did not include FM residents in urban programs who were taking rural placements. Invitations to participate were sent to all FM residents at rural program sites in the 3 schools via e-mail. Given the relatively low numbers, all volunteering residents were entered into the study. A \$50 gift card was offered as an incentive to each resident who participated in the study. Our sampling strategy reflected the voluntary nature of participation and the caution required in managing required participant confidentiality and autonomy at the 3 schools.

Data collection

We developed and piloted a provisional semistructured interview framework. Interviews were audiorecorded, transcribed, and de-identified for analysis. Transcripts from the pilot were read and discussed by the team, and the interview framework was adjusted to make questions clearer to focus on emerging concepts. The interview script was pilot tested and is available from CFPlus.* Data were reviewed episodically and additional probing questions were added to track emerging issues. We also generated descriptive community profiles based on public online data to help to situate participant responses.

Analysis

Transcripts were analyzed by iteratively reading them and line-by-line coding them, making memos, and

*The interview guide is available from <https://www.cfp.ca>. Go to the full text of the article online and click on the CFPlus tab.

discussing emerging findings within the coding team. Multiple rounds of coding and discussion took place to ensure the emerging theories and explanations were grounded in the data. As high-level themes and theories emerged, aggregated data were shared among the whole group for discussion and examination. Validation checks were made regarding the specifics of different sites using the community profiles and investigator knowledge of the different sites (J.B., M.T., R.K.). Perceptions were also tabulated by noting which patterns participant comments mapped to with respect to the sites they had experienced. Member checking was used to confirm findings.

Findings

In total, 26 participants were recruited to the study: 12 from UBC (17% of eligible residents), 8 from UA (20%), and 6 from UC (21%). The age range was between 25 and 34 years, with a mean age of 28.5 years. Other demographic characteristics are presented in **Figure 1**.

Taken together, the participants provided descriptions of 27 distinct communities, of which 10 were regional community sites and 17 were affiliated rural community sites. Many participants compared and contrasted the different sites in which they had completed rotations. There were multiple descriptions (between 2 and 6 each) of 6

program sites and of 6 affiliated rural sites. **Table 1**¹⁴⁻¹⁸ has demographic information about these sites.

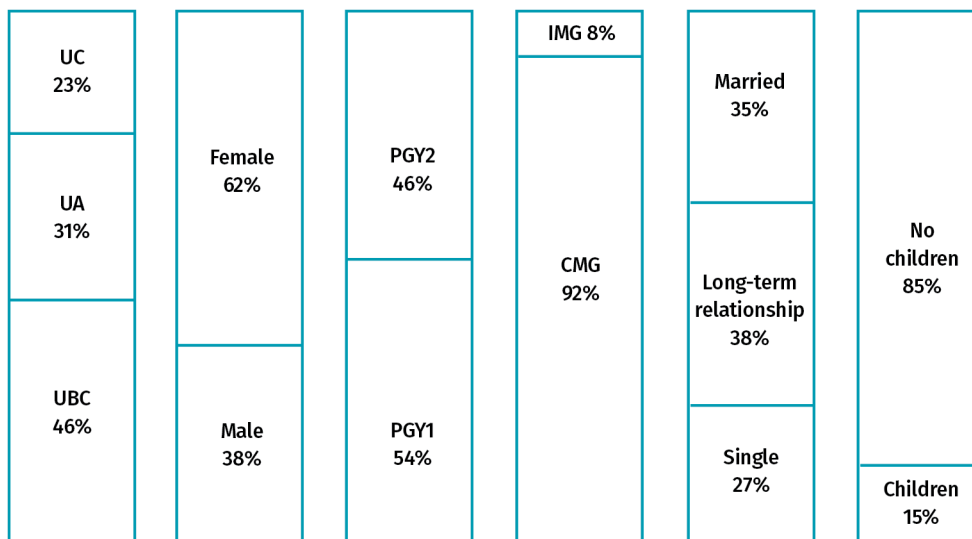
We first reported on perceived differences in context across sites and then on differing participant perceptions. We used the 6 clinical training contextual patterns to structure our presentation.⁹ Example quotations from the data are provided in **Table 2**.

Contextual variation across sites

Patient context. Participants described differences (such as age, sex, ethnicity, culture, socioeconomic status, and presentation profiles) in the kinds of patients they had encountered in communities. Differing interactions with Indigenous peoples were a recurring theme noted by participants. These were a reflection of the relative size of the local Indigenous population; the different Indigenous bands, nations, and cultures participants encountered; the extent to which Indigenous peoples lived separately (for instance on reservations) or lived as part of the general population; and the extent and form of local health care services targeted at Indigenous populations.

Other differences included the presence and dynamics of particular religious communities (such as Mennonites, Hutterites, or Mormons), language differences (in particular French), and variations in age, from younger communities (those with a higher proportion of younger families

Figure 1. Demographic breakdown of participants (N = 26) by university, sex, year of residency training, type of MD training, relationship status, and whether or not they had children



CMG—Canadian medical graduate, IMG—international medical graduate, MD—Doctor of Medicine, PGY1—postgraduate year 1, PGY2—postgraduate year 2, UA—University of Alberta, UBC—University of British Columbia, UC—University of Calgary.

Table 1. Training site characteristics

SITE*	POPULATION†	DISTANCE FROM MAIN CAMPUS, km‡	SPECIALTY SERVICES§	NO. OF ACUTE BEDS	AFFILIATED UNIVERSITY PROGRAM
Regional sites					
• Fort McMurray	61 374	446	AU, ED, GS, IC, IR, LB, MH, OB, ON, NU, OT, PD, PL, PT, RM	> 100	University of Alberta
• Grand Prairie	55 032	457	CA, GE, GS, MH, NN, OB, PD, UR	140	University of Alberta
• Red Deer	90 564	155	CA, EN, ED, GS, IR, MH, OB, ON, OR, OT, PD, PL, PS, UR	326	University of Alberta
• Campbell River	31 188	241	AM, AN, CA, DN, ED, GS, LB, OB, ON, OR, PD, PS, UR	95	University of British Columbia
• Fort St John¶	18 609	1204	AM, ED, GS, OB, OC, OP, OR, OT, PA, PS, UR	55	University of British Columbia
• Kelowna	179 839	398	AU, CA, DE, DN, EN, ED, GA, GE, GR, GS, IC, IH, IR, LB, MH, NR, NU, OB, OC, ON, OP, OR, OT, PL, PS, RM, UR, WH	351	University of British Columbia
• Prince George	71 973	795	Detailed information not available	219	University of British Columbia
• Terrace¶	18 581	1363	AM, EN, ED, LB, MH, OB	39	University of British Columbia
• Lethbridge	89 074	223	AM, AU, CA, GR, GS, IC, IH, IR, LB, MH, NE, NM, NN, OB, OC, ON, OT, PD, PT, RM, WH	270	University of Calgary
• Medicine Hat	63 018	295	AU, CA, ED, GR, GS, IC, IR, LB, MH, NE, NM, NU, OB, OR, ON, OT, PD, PT, RM	325	University of Calgary
Rural sites					
• Bonnyville	6216	247	ED, GE, GS, IR, ON	63	University of Alberta
• High Level	3641	738	GE	32	University of Alberta
• Inuvik¶	3463	3213	VS	51	University of Alberta
• Lamont	1753	69	AU, ED, GR, GS, OB, OP, OT, PL, PO	120	University of Alberta
• Ponoka	8856	105	GE	57	University of Alberta
• Three Hills	3198	245	GE, OB	45	University of Alberta
• Whitehorse¶	32 276	2409	ED, IH, IR, LB, OC, VS	55	University of Alberta
• Gibsons	4182	55	GS, IM, MH, OB, OP	38	University of British Columbia
• Grand Forks	3985	530	ED, GS, MH, OT	12	University of British Columbia
• Haida Gwaii	4761	1711	Detailed information not available	8	University of British Columbia
• Bow Island	2025	306	GE	30	University of Calgary
• Cardston	3580	238	GE	31	University of Calgary
• High River	12 920	70	GE	77	University of Calgary
• Peace River	6729	740	GE	71	University of Calgary
• Pincher Creek	3685	217	GE	19	University of Calgary
• Sylvan Lake	12 327	157	FPs with specialty interest; no hospital	0	University of Calgary
• Taber	8104	266	GE	29	University of Calgary

AM—ambulatory, AN—anesthesiology, AU—audiology-speech, CA—cardiology, DE—dermatology, DN—dental, ED—emergency, EN—endocrinology, FP—family physician, GA—gastroenterology, GE—general medicine, GR—geriatric medicine, GS—general surgery, IC—intensive care, IH—Indigenous health, IM—internal medicine, IR—imaging-radiology, LB—laboratory services, MH—mental health-psychiatry, NE—nephrology, NM—nuclear medicine, NN—neonatology, NR—neurology, NU—nutrition, OB—obstetrics-gynecology, OC—occupational therapy, ON—oncology, OP—ophthalmology, OR—orthopedics, OT—otolaryngology, PA—pathology, PD—pediatrics, PL—palliative, PO—podiatry, PS—plastic surgery, PT—physical therapy, RM—respiratory medicine, UR—urology, VS—visiting specialist clinics, WH—women's health.

*These are not all of the regional and rural sites used by the 3 schools in the study; these are the sites where participants had been placed.

†Population data from Statistics Canada.¹⁴

‡Distance (km) from main campus based on information from Google Maps.¹⁵

§On-site specialty services were identified from the Canadian Institution for Health Information,¹⁶ the Northwest Territories Health and Social Services Authority¹⁷, and Yukon Hospitals.¹⁸

¶Although Terrace and Fort St John (British Columbia) are smaller than the other regional sites and do not function as regional medical hubs in the same way as the others, residents are still matched to these 2 sites as their training base.

‡Electives only.

Table 2. Participant quotations according to study reporting categories

THEMES OR PATTERNS	QUOTATIONS
Differences between sites	
• Patient	• “Depending on the town there’s different demographics ... in [X] there’s a big reserve right beside it so a lot of the patients were First Nations and so that was a lot different than ... [Y] that didn’t have any reserves around it.”
• Physical	• “It’s minus 30 outside and a snowstorm for 3 weeks ... that was part of the reason that they didn’t go was because it wasn’t super easy to just to pop to the next town and get it done.” • “They have events, they have lots of activities, but those are only available in [X] and we don’t have any chance ... a 5-hour drive one way and [a] 5-hour drive the other way, just to attend an event.”
• Practice	• “The medicine in [Z] isn’t necessarily rural. It’s certainly remote but it’s not necessarily rural. I mean we have the MRI scanner. We have specialists and stuff like that.” • “I knew ... there wouldn’t be as many systems in place for us as learners because [a] regular hospital does not depend on learners to function at all. So, I knew that it wasn’t as service based going into it. And I was very much okay with that.”
• Educational	• “You’re not often working with another resident who can, kind of, give you a sense of like, where should I be. Like, kind of, benchmark based on where other people are at.”
• Institutional	• “There were services available, but everyone there was just, sort of ... the attitude that was taken on, that there was no point, and so just nobody did it.”
• Social	• “It may be a family medicine thing that because the residency’s short, it won’t be very long before residents are colleagues so you may as well treat them like colleagues straight away. Yeah, but I think that’s an aspect that definitely takes the edge off things, you know, I think everyone’s very approachable.”
Unexpected affordances	• “I wasn’t expecting so much diversity in the population ... you think, like, northern, small town, and it’s probably 90% Anglo-Saxon population without too much diversity there, but ... there’s a good amount of immigrants, Aboriginal populations.”

MRI—magnetic resonance imaging.

and a lower proportion of retirees—typically a sign of communities that were dependent on resource industries) to rural communities with a sizeable retirement population. Socioeconomic differences were also noted, including levels and distribution of wealth, alcohol and drug use, levels of crime and violence, attitudes to gender and sexuality, education levels, population demographic characteristics (such as change due to tourists or migrant workers), occupation (such as communities dominated by natural resources or retirement industries), and economic instability. These varying characteristics directly shaped the illness profiles and patient beliefs.

Physical context. Some of the physical differences identified in this study reflect the vast geographic area covered by the 3 schools (more than 1.6 million km²); it included Pacific coast, rainforest, mountains, boreal forest, prairie, and desert terrain. Latitude and longitude affected the amount of daylight, the duration and nature of winter, and the weather patterns year round. Remoteness was a recurring factor, defined both in terms of the time taken to travel to or from a site and a resident’s sense of isolation or separation from friends and family. The concept of rurality was most often described in terms of lower population densities and was clearly differentiated from the concept of remoteness. Participants often noted the time, effort, and risks associated with traveling to and from communities, both for their patients and for themselves.

Practice context. Participants noted variation in the practice context of regional sites (having a wider scope of practice and a wider range of clinical services) and smaller rural sites (having a more limited scope of practice and associated services). The differences between rural sites tended to be larger than between regional sites. For instance, in some smaller communities FM preceptors also undertook specialist care (such as emergency care, anesthesia, or obstetrics) while in other communities they did not. However, if there was no hospital, then in-hospital care was not taught. Scope of practice was also shaped by population differences, particularly in providing care for Indigenous and religious communities. There were also differences in levels of patient advocacy as modeled by preceptors at each site. For instance, responses to chronic community drug and alcohol abuse were for some community preceptors a matter of making sure their patients were medically managed, while in other communities there was more of a focus on addressing root causes. The practice context also reflected the extent of a site’s remoteness, as smaller but more remote sites often functioned as a hub and offered a wider range of services than rural sites that were larger but were closer to a tertiary referral centre. The presence of particular services and specialties also varied according to the ability of a community to recruit and retain individuals to provide those services, which meant that learning opportunities did

not simply reflect the size or type of community, but also the social desirability of living and practising there. Practice was also shaped by the extent to which patients were referred or transferred to larger centres. At sites where referrals were more common, the focus tended to be on the logistics and continuity of transfer, while sites that provided more in-house services tended to have more of a patient management focus. Lower acuity environments, which tended to be smaller and more rural, allowed residents to see their patients more often and for more routine matters.

Educational context. The roles and responsibilities of teachers and preceptors varied between sites. Larger centres tended to take a more formal approach to teaching (such as helping learners prepare for examinations) and tended to make more use of team teaching; smaller sites tended to be less formal and more dependent on single preceptor-resident learning dyads. Although all 3 programs ran dedicated academic half days at 1 or 2 central sites, how residents engaged with these events varied substantially by community, with those in smaller, more remote locations tending to be less able to participate and having less access to local alternatives. Individual preceptor commitment to teaching also varied, but did not show any particular pattern; there was some suggestion that variance in disposition toward teaching could vary as much, if not more, within a site as between sites. More remote sites often afforded more contact time with preceptors but less opportunity to teach junior residents or medical students. The ways that residents were treated and their ability to direct their own learning also varied between sites, with some communities focusing on the educational needs of their residents, while others focused on using them to cover gaps in service delivery. Smaller sites rarely had other residents, which meant that the resident was the only learner there, thus they had no learner peer group on hand. Residents at larger centres also tended to have a larger service requirement, which limited the range of training experiences available to them compared with those in smaller, less service-based sites. Participants also noted that financial and logistical support differed between provinces, with Alberta's Rural Health Professions Action Plan (<https://rhpap.ca>) providing supports for learners that were not as easily available in British Columbia.

Institutional context. Participants observed different clinical cultures and values, reflected for instance in how they were welcomed when starting at a new site. Smaller sites were less hierarchical and more responsive to individual resident needs, although limited resources, particularly in terms of the services offered and the ability to sustain services, also shaped the learning opportunities they afforded. Other factors included kinds of health

care professional resources (team profiles, cover, and access to consultants), levels and forms of communication within the team, and clinical infrastructure. For instance, participants encountered many electronic medical record systems with varying rules as to who could use them and how to use them.

Social context. The social experience of being in different communities also varied. For instance, smaller centres tended to be less anonymous but also had a more accessible social dynamic and often had better access to recreational activities (such as skiing or hiking). Smaller sites also had greater intimacy between members of the community. Several participants described how they had struggled to sustain relationships in remote sites. Also, some communities had a distinct social dynamic that arose from strongly shared political opinions or religious beliefs, which were often not shared by the resident or were not even particularly familiar or well understood by them.

Perceptions of contextual variation

While participants had anticipated some differences and contextual challenges in moving between sites, they also encountered many unexpected issues and challenges (Table 3). For instance, even when participants had anticipated ethnic differences, they often had not anticipated religious variation in the communities they encountered.

We were surprised to find that individual residents had differing perceptions of the same community. For instance, while one learner focused on the challenges and novelty of the patient mix they encountered, another focused on the strengths and weaknesses of the practice environment or the local educational culture. We also found that some learners perceived the same issues but attached different values to them. For instance, one learner may have found encountering unfamiliar social groups a positive and interesting challenge while another in the same community may have struggled to come to terms with and respond to the social issues that community faced.

— Discussion —

Residents perceived teaching hospitals, no matter where they were, as being very similar in their culture, setting, and what could be done in them. Regional sites were perceived as different from academic health science centres and from one another in some ways but were also similar in that they all functioned as regional referral hubs. However, regional sites differed from teaching hospitals in that there were often no non-family medicine specialty senior residents or fellows on site. Rural communities were much more diverse. They often had few or no specialized resources, had no hospital or a limited hospital, and had little or no investigative capability.

Table 3. Examples of experiences, both anticipated and unanticipated, that participants had encountered when moving between sites

PATTERN	EXPERIENCES OF DIFFERENT SITES	
	ANTICIPATED BY RESIDENT	UNANTICIPATED BY RESIDENT
Patient	Population variation, different cultures and nationalities, Indigenous populations, age of population, diversity and complexity of health issues	Drug use and associated presentations (clinical and social), dynamics of Indigenous or religious communities, how passive or engaged patients were with their own care, how lack of patient volume limits learning opportunities, challenges of unfamiliar socioeconomic situations (such as chronic poverty and deprivation, particularly at the community level)
Practice	Scope of practice offered, preparation for rural practice, challenges of providing care with limited resources, availability of consultant physicians, sufficiency of on-site resources, approach to providing primary care	Limited availability of out-of-hours clinical services (such as radiologists and laboratories), lack of resources driving better learning through having to problem solve and adapt to current situation (more resources means less problem solving is required of the resident), lack of resources means patients are transferred to larger centres (meaning that continuity of care and learning is disrupted), lack of resources restricts learner autonomy, better relationships with preceptors than in larger centres, resignation to social challenges, better integration between primary and tertiary care
Physical	Safety and comfort, amount of personal travel required, weather	Challenges of having to transport patients to larger centres in adverse conditions, particularly when the acuity of their condition needs to be balanced with the potential harms of being transported in dangerous conditions
Educational	Strength or acceptability of the program, length of rotation, fewer residents at site means more opportunities to practise, more or less of a service requirement	Flexible scheduling allows for different learning goals, substantial variation in preceptor engagement, limited academic focus on site, limited access to academic opportunities both locally and at other sites, different teaching styles, local awareness of educational program dynamics or requirements
Institutional	No anticipated institutional issues raised	Differing levels and kinds of service expectations, different conflicting responsibilities (teaching one among many), challenging relationships between medical community and substance-abusing population, atypical prescribing practices (such as for diazepam)
Social	Support from spouse or partner (with them or located in town close by), presence of close family, grew up there, presence of friends, commuting distance to home and partner, preference for smaller town lifestyle, partner's preference or work, available leisure and recreational activities	Welcoming nature of small communities and small-town preceptors, lack of hierarchy, more collegiality, awareness of being an incomer and having to adapt, differences in religion or politics between resident and community could be isolating

Family physicians clearly functioned differently in these rural communities and this, combined with the patient mix and the social and physical nature of different sites, clearly shaped what could be taught there.

It is not surprising that residents participating in the same program had encountered very different learning opportunities and challenges. Moreover, no 2 residents perceived the same community in the same way or learned in the same way. Sometimes the opportunities different sites afforded were welcomed, particularly when the resident was able to quickly fit into the community. For residents in other contexts, the differences proved problematic, particularly when a community dynamic meant that the resident would never be a good fit.

Our findings parallel those of studies that have explored how clinical training contexts can affect learning,¹⁹⁻²¹ as well as those exploring how learners may

struggle to adapt to new training locations.^{20,21} We have extended this conversation by noting the complex network of contextual differences between training sites. More specifically, this exploratory study has illustrated the differences between FM training sites, as well as the ways in which residents can perceive that variation. These may relate directly to learning opportunities (such as clinical services offered or the population served) or they may be secondary influences on learning (such as physical challenges or social opportunities). Either way, although there may be similarities between certain sites in some areas, each training site is unique with its own idiosyncratic mix of challenges and opportunities for the residents placed there. Although the study is grounded in the specific contexts we explored, we can reasonably expect similar levels of variance if not exactly the same variance factors in distributed medical programs elsewhere.

At one level this may seem like a problem for residency programs: if every site has some kind of learning and limits others then these sites are not truly interchangeable. However, by understanding what sites can offer, rather than undertaking a fixed number of generic community placements, residents could be matched to sites according to their needs and capabilities. A flight of site placements might be selected for a particular learner to give them the mix of experiences they need, particularly if one site is unable to cover all of their needs. This would require greater attention to each site and the needs and capabilities of the residents. However, we also found that what each site offered depended on what learners perceived to be available to them there. This is an intrinsic limitation to an entirely algorithmic approach of “learner X needs what site Y offers” and suggests that learners may need more specific preparation for and orientation to the particular opportunities and dynamics of different sites. It is clear that more attention from academic centres to the complexity of distributed medical education is needed if it is to be a long-term and viable part of the medical education landscape.

Limitations

We acknowledge a number of limitations in the current study. We did not explore the educational effect of different patterns or individual factors, nor did we explore why residents perceive aspects of training sites in different ways. We did not consider what effect the frequency of moves between sites might have had, or if the total number of moves affected residents’ perceptions of or adaptability to change. Moreover, as our participants were still in training, we were not able to explore how their experiences at these training sites shaped their future practice patterns and locations. These are topics that we plan to explore in subsequent studies. The generalizability of our findings will need to be tested in practice. For instance, distributed programs elsewhere might reasonably be expected to differ in the specifics even if the general patterns are still present. Nevertheless, even though the details may differ, the principles of contextual variance are likely to apply beyond the study context. Indeed, they are likely to apply in any program setting where there is a degree of contextual variance.

However, we attended to methodologic rigour in this study by piloting and adapting the instrument and our frame of analysis to follow emerging issues and themes, engaging in individual member checking of transcripts, engaging 3 coders working in parallel with frequent meetings to synthesize emerging concepts and theories, providing descriptions of the context participants referred to, and continuing data collection and analysis until we had reached theoretical saturation.

Conclusion

This study sought to stimulate a more nuanced and

pluralist approach to distributed medical education by taking into consideration the affordances of the many different training contexts we use and the ways in which different learners may perceive or be able to use them. These issues are important for faculties, programs, sites, preceptors, and learners; a more contextually engaged approach to distributed medical education has the potential to substantially change the system. There are implications of this study for the design of programs, the selection of sites, the matching of learners to sites, the orientation of sites and learners to one another, and an increased precision in how the rich affordances of a distributed model can lead to more individual and meaningful learning and professional development. 🌿

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Contributors

All authors contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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