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LEARNERS' CORNER

ERRATUM

"Duo in Trinity," © 2021
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This duo of houses caught my eye during a summer trip to Trinity, on the Bonavista Peninsula in Newfoundland. It was an overcast evening with a gray whiteness of sky and water that emphasized the houses and conveyed moodiness.

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Diversity

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Many strides have been made in the medical student population in a lot of areas. Much of the change is passive, as medical schools recruit from applicants who are most definitely not representative of the general population. Be that said, attempts have been made to have Indigenous (and occasionally rural) diversities addressed in Canadian medical school admissions, processes and policies.

Indigenous students have perhaps had the greatest proportionate increase in numbers. Some schools will admit close to the proportion of Indigenous peoples (5% of Canadians) to their schools, and the Northern Ontario School of Medicine University (NOSMU) hit a record of 17% of the incoming class being Indigenous for the class of 2025.[1,2]

Females have had the greatest absolute increase in numbers, as the incoming classes are predominantly female and have been for quite a while. It's a bit specious to lament a lack of male students, as the profession as a whole, and grey-hair positions in particular, tend to be male. Still, with half of practising family physicians being female, some measure of equity has been achieved. It should be noted that this result may not be primarily by aegis of the medical schools, but rather a reflection of the gender balance of the university student population.

Rural background has also made strides but is still lagging. It is a bit difficult to follow, as the universities seem to like to obfuscate the data. For example, NOSMU, despite rural expertise, co-mingles a compass direction (Northern) with rural. When you use a rural-only definition, the results show that we still have a long way to go. A Canadian Federation of Medical Students survey reports that 6.4% of students grew up in a rural area compared to 18.7% of Canadians.[3]

We have lost ground in representation across the social and economic strata of society. The soup kitchen mentioned on the medical student resume is invariably not about their own food insecurity.'[4] A recent study has shown that 62.9% of Canadian medical student respondents came from households earning more than $100,000 per year, compared to 46.7% in a 2007 survey and 36.5% in a 2001 survey. Conversely, 7.5% of students came from households earning <$40,000 per year, compared to 12.8% in 2007 and 17.6% in 2001.[3]

If we truly believe that our population is best served by physicians who reflect the communities they come from, we need better policies at the schools to achieve it.

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Diversité

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La population des étudiants en médecine a beaucoup évolué dans de nombreux domaines. La plupart des changements sont passifs, car les écoles de médecine recrutent des candidats qui ne sont absolument pas représentatifs de la population générale. Cela dit, des tentatives ont été faites pour que les diversités autochtones (et parfois rurales) soient prises en compte dans les admissions, les processus et les politiques des écoles de médecine canadiennes.

Les étudiants autochtones sont peut-être ceux dont le nombre a le plus augmenté proportionnellement. Certaines écoles admettent près de la proportion d'autochtones (5% des Canadiens) et l'École de médecine du Nord de l'Ontario (EMNO) a atteint le chiffre record de 17% d'autochtones pour la promotion 2025.[1,2]

Nous devons parler discrètement de l'égalité entre les hommes et les femmes. Ce sont les femmes qui ont connu la plus forte augmentation en chiffres absolus car les classes entrantes sont majoritairement féminines, et ce depuis un certain temps Il est un peu superficiel de déplorer le manque d'étudiants masculins car la profession dans son ensemble, et les postes importants en particulier, y compris celui-ci, ont tendance à être occupés par des hommes. Néanmoins, avec la moitié des médecins de famille en exercice qui sont des femmes, un certain degré d'équité a été atteint. Il convient de noter que ce résultat n'est peut-être pas dû en premier lieu à l'égide des écoles de médecine, mais qu'il reflète plutôt l'équilibre entre les sexes au sein de la population étudiante de l'université.

Le milieu rural a également fait des progrès, mais reste à la traîne. Il est un peu difficile de suivre car les universités semblent vouloir obscurcir les données. Par exemple, l'EMNO, en dépit de son expertise en matière de ruralité, associe une direction de boussole (le nord) à la notion de ruralité. Lorsque l'on utilise une définition uniquement rurale, les résultats montrent que nous avons encore un long chemin à parcourir. Une enquête de la Fédération canadienne des étudiants en médecine indique que 6,4% des étudiants ont grandi dans une région rurale, contre 18,7% des Canadiens.[3]

Il n'y a pas que des progrès. Nous avons perdu du terrain dans la représentation des différentes couches sociales et économiques de la société. Pour reprendre le thème de mes derniers éditoriaux, " la soupe populaire mentionnée sur le CV des étudiants en médecine n'a invariablement rien à voir avec leur propre insécurité alimentaire ".[4] Une étude récente a montré que 62,9% des étudiants en médecine canadiens interrogés venaient de ménages gagnant plus de 100 000 dollars par an, contre 46,7% dans une enquête de 2007 et 36,5% dans une enquête de 2001. À l'inverse, 7,5% des étudiants venaient de ménages gagnant moins de 40 000 dollars par an, contre 12,8% en 2007 et 17,6% en 2001.[3]

Si nous croyons vraiment que notre population est mieux servie par des médecins qui reflètent les communautés dont ils sont issus, nous avons besoin de meilleures politiques dans les écoles pour y parvenir.

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President's Message

Taking the lead in rural health

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What an incredible 2 years. As my term as President draws to a close, I am filled with a sense of pride in our accomplishments, as an organisation of passionate, caring and skilled rural physicians. At this critical time, the SRPC has positioned itself as the voice for rural healthcare. Our opinion is sought at federal, provincial, organisational and academic tables. In these past 2 years, we have gathered stakeholders for a National Rural Patient Transfer Summit, worked towards National Licensure, and contributed to Health Human Resources planning discussions. We have advocated and offered expertise on family medicine education reform, ensuring training suits the needs and realities of rural practice. SRPC members have contributed so much, and I wish to personally thank you all for the great work done.

Much like the 2022 conference theme 'Out of the Ashes,' the SRPC has emerged stronger. Our member programs have seen incredible growth, including an Indigenous health educational series, enhanced mentorship, transgender health and IMG-specific webinars and development of the Rural Physician Partners of Canada. Our National Advanced Skills and Training Program has been wildly successful. In less than a year, we have supported 332 rural physicians from 187 communities to enhance their skills. We have also embarked on a project documenting the stories of trailblazing rural female physicians, who are mentors to many, and keepers of profound knowledge.

The future is exciting. With a team of skilled and dedicated staff to support members, the work continues. In the coming year, we will publish our first annual report, highlighting the results of our member survey and key successes of the SRPC. We also plan to launch a national rural locum database, to connect locums with rural doctors seeking coverage, solely for those with the skills and passion to work in rural and remote regions.

As Past-President, I hope to further the SRPC's efforts to increase the number of rural physicians from equity-deserving groups participating in leadership roles. As a rural female physician leader, I have experienced first-hand some of the challenges: balancing responsibilities and expectations of life and navigating ongoing biases and structural barriers that can stand in the way of success. I am so thankful for the support of several strong rural female physician leaders, who continue to offer encouragement and inspiration. In celebrating our strengths and successes, and with supportive mentors who show us the path, we can enable everyone to own the space of leadership and, ultimately, create a sustainable rural health system for ourselves, and our communities.

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Prendre l'initiative en matière de santé rurale

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Deux années incroyables. Alors que mon mandat de présidente touche à sa fin, je suis très fière de ce que nous avons accompli en tant qu'organisation de médecins ruraux passionnés, attentifs et compétents. En cette période critique, la SMRC s'est positionnée comme la voix des soins de santé en milieu rural. Notre opinion est sollicitée aux niveaux fédéral, provincial, organisationnel et universitaire. Au cours des deux dernières années, nous avons rassemblé les parties prenantes pour un sommet national sur le transfert des patients en milieu rural, travaillé à l'obtention d'une licence nationale et contribué aux discussions sur la planification des ressources humaines dans le secteur de la santé. Nous avons défendu et offert notre expertise sur la réforme de l'enseignement de la médecine familiale, en veillant à ce que la formation réponde aux besoins et aux réalités de la pratique rurale. Les membres de la SMRC ont apporté une contribution considérable et je tiens à vous remercier personnellement pour l'excellent travail accompli.

À l'instar du thème de la conférence de 2022 " Out of the Ashes", la SMRC en est sortie plus forte. Nos programmes pour les membres ont connu une croissance incroyable, y compris une série éducative sur la santé autochtone, un programme de mentorat amélioré, des webinaires sur la santé des transgenres et des webinaires spécifiques aux DIM, ainsi que le développement des Parternaires de médecins en milieu rural du Canada. Notre Programme national de compétences et formation avancées a connu un succès retentissant. En moins d'un an, nous avons aidé 332 médecins ruraux de 187 communautés à améliorer leurs compétences. Nous nous sommes également lancés dans un projet visant à documenter les histoires de femmes médecins rurales pionnières, qui sont les mentors de nombreuses personnes et les gardiennes d'un savoir approfondi.

L'avenir est passionnant. Avec une équipe d'employées compétentes et dévouées pour soutenir les membres, le travail ne s'arrête pas. Au cours de l'année à venir, nous publierons notre premier rapport annuel, qui mettra en lumière les résultats de notre enquête auprès des membres, ainsi que les principales réussites de la SMRC. Nous prévoyons également de lancer une base de données nationale des suppléants ruraux, afin de mettre en relation les suppléants et les médecins ruraux à la recherche d'une couverture, uniquement pour celles et ceux qui ont les compétences et la passion nécessaires pour travailler dans les régions rurales et éloignées.

En tant que présidente sortante, j'espère poursuivre les efforts de la SMRC pour augmenter le nombre de médecins ruraux issus de groupes méritant d'être traités équitablement et occupant des postes de direction. En tant que femme médecin leader en milieu rural, j'ai vécu personellement certains défis: concilier les responsabilités et les attentes de la vie, ainsi que naviguer entre les préjugés et les barrières structurelles qui peuvent faire obstacle à la réussite. Je suis très reconnaissante du soutien de plusieurs femmes médecins leaders en milieu rural, qui continuent à m'encourager et à m'inspirer. En célébrant nos forces et nos réussites, et en nous appuyant sur des mentors qui nous montrent le chemin, nous pouvons permettre à chacun de s'approprier l'espace de leadership et, en fin de compte, de créer un système de santé rural durable pour nous-mêmes et pour nos communautés.

ORIGINAL ARTICLE

Informal peer support for rural doctors

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Abstract

Introduction: Practising medicine exposes physicians to emotionally difficult situations, which can be devastating, and for which they might be unprepared. Informal peer support has been recognised as helpful, although this phenomenon is understudied. Hence, it is important to develop a better understanding of the features of helpful informal peer support from the experiences of physicians who have successfully moved through such difficult events. This could lead to new and potentially more effective ways to support struggling physicians.

Methods: Rural Canadian generalist physicians were interviewed. Using a hermeneutic phenomenological approach, data analysis was oriented towards understanding features of helpful informal peer support and the meanings that participants derived from the experience.

Results: Eleven rural generalist physicians took part. Peer support prompted the processing of difficult emotional experiences, which initially seemed insurmountable and career-ending. Participants overcame feelings of emotional distress after even brief encounters of informal peer support. Most participants described the support they received as *vitally important*. After the peer support encounter, practitioners no longer thought of leaving medical practice and felt more able to handle such difficulties moving forward.

Conclusions: Informal peer support enabled recipients to move through an emotionally difficult experience. Empathy, shared vulnerability and connection were the part of the peer support encounter. In addition, the support offered benefits which are known to help physicians not only process emotionally difficult events but also to acquire 'post-traumatic growth'. Practitioners, healthcare leaders and medical educators all have roles to play in enabling the conditions for informal peer support to flourish.

Keywords: Informal peer support, qualitative research, rural medicine

Résumé

Introduction: La pratique de la médecine expose les médecins à des situations émotionnellement difficiles, qui peuvent être dévastatrices, et auxquelles ils ne sont pas préparés. Le soutien informel par les pairs a été reconnu comme utile, même si ce phénomène est peu étudié. Il est donc important de mieux comprendre les caractéristiques du soutien informel par les pairs à partir des expériences de médecins qui ont réussi à traverser des événements aussi

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difficiles. Cela pourrait conduire à de nouvelles façons, potentiellement plus efficaces, de soutenir les médecins en difficulté.
Méthodes: Onze médecins généralistes canadiens ruraux ont été interrogés. En utilisant une approche phénoménologique herméneutique, l'analyse des données a été orientée vers la compréhension des caractéristiques du soutien informel utile par les pairs et des significations que les participants ont tirées de l'expérience.
Résultats: Le soutien des pairs a incité à vivre des expériences émotionnelles difficiles, qui semblaient au départ insurmontables et mettant fin à une carrière. Les participants ont surmonté leurs sentiments de détresse émotionnelle après même de brèves rencontres de soutien informel par leurs pairs. La plupart des participants ont décrit le soutien qu'ils ont reçu comme étant d'une importance vitale. Après la rencontre de soutien par les pairs, les praticiens ne pensaient plus à quitter la pratique médicale et SE sentaient plus capables de faire face à de telles difficultés à l'avenir.
Conclusion: Le soutien informel par les pairs a permis aux bénéficiaires de traverser une expérience émotionnellement difficile. L'empathie, la vulnérabilité partagée et la connexion faisaient partie de la rencontre de soutien par les pairs. En outre, le soutien a offert des avantages connus pour aider les médecins non-seulement à gérer des événements émotionnellement difficiles, mais également à acquérir une 'croissance post-traumatique'. Les praticiens, les dirigeants des soins de santé et les enseignants en médecine ont tous un rôle à jouer pour permettre aux conditions propices au soutien informel par les pairs de s'épanouir.

Mots-clés: Soutien informel par les pairs, médecine rurale, recherche qualitative

INTRODUCTION

Practising medicine, by its nature, creates emotionally difficult situations for physicians. Adverse events, medical errors, complaints and malpractice lawsuits are recognised as particularly challenging events for practitioners to cope with and commonly result in emotions such as shame, guilt, shock, fear and pain.[1-5] 'While these events are, to some degree, an inescapable part of the medical profession, conventional training does not address their potentially devastating emotional impact on healthcare providers',[5] nor offer a pathway for practitioners to navigate such experiences.

Previous research has described health professionals as the 'secondary victims' of medical error, adverse patient outcomes and other difficult events and has identified a range of significant emotional and psychological repercussions arising from this experience, including chaos and response, intrusive reflections, restoring personal integrity, enduring the inquisition, obtaining emotional first aid and moving on.[2] Affected practitioners are known to experience long-term effects from these experiences, described as dropping out, surviving or thriving.[2] As yet our understanding of coping strategies and supports for affected providers is incomplete.[4] It is important to develop a better understanding of the experiences of physicians who have successfully moved through such difficult events.

Rural practitioners are perhaps more vulnerable than their urban counterparts to these experiences. Rural physicians are at times called to practise outside of their usual scope of practice, to provide essential medical care to patients in need when access to specialist care is not available in a timely fashion.[6] This 'clinical courage' is seen as part of the practice of rural medicine, in which practitioners make a 'deliberated altruistic decision to put themselves into positions where they will feel out of their depth clinically and risk distress, professional isolation and potentially psychological trauma' to serve their patients.[6] Clinical courage is facilitated by local medical team relationships, especially the help of skilled doctors, nurses and paramedics. Other trusted rural doctors, who are part of the rural physician's own network, may also provide support for the ongoing practice of clinical courage.[7]

Physicians who experience emotionally difficult situations desire peer support, that is, assistance, comfort and encouragement to keep going.[2,5] Research suggests that peers are regarded by affected physicians as the most desirable source of support[5,8,9] and particularly a peer of equal standing and with insight into the situation.[10] However, physicians may be unable or unwilling to access adequate peer

support.[5] Concern about stigma and negative career repercussions prevent practitioners from reaching out.[5] Elements of medical culture, such as the conspiracy of silence, the culture of blame and the tendency to ignore distress, pose challenges for physicians to both appreciate and address their suffering.[11] In an attempt to bridge this gap between need and accessibility, there is a growing call for organisations to develop formal peer support programmes.[12-14] While these programmes are welcomed, informal peer support (that which arose spontaneously, outside of an organised support programme) may offer unique advantages.

Although informal peer support may not be widely available, some physicians do access it. Yet, there has been little work done to understand the experience of those who have engaged in it. Informal peer support has the potential to be a helpful, low-cost and potentially easily available intervention. Our research looked at understanding the features of effective informal peer support, and how it arises, which could lead to potentially more effective ways of supporting struggling physicians.

METHODS

Methodology

We adopted a hermeneutic phenomenological approach, as we sought to both describe and advance understandings of helpful informal peer support from studying participants' lived experiences and the meaning they attribute to those experiences.[15,16] Phenomenology seeks to describe lived experiences,[17] whereas hermeneutics is the study of knowledge and knowing through interpretation and holds that researchers naturally bring their own experiences and knowledge to a research project.[16] Hermeneutics adds a layer of interpretation of meanings that moves the findings beyond the immediacy of the lived experience.

In hermeneutic phenomenology, the researchers bring their own 'horizons' to the research by reflecting on the meanings attributed to the experience resulting (metaphorically speaking) in a fusion of horizons – that of the researchers and the participants, thus enabling new insights to be developed.[18] The first and second authors are longstanding and committed rural physicians with experience in supporting the well-being of rural practitioners and thus are well positioned to bring their understanding of those contexts to the research process. The third author is an outsider to the community – an experienced medical education researcher.

Participants

Participants were a purposive sample of Canadian rural physicians who self-identified as having had a positive experience of engaging with informal support from a peer, in relation to a work-related stressor. Those with a positive experience of informal peer support were chosen because they could tell us about the phenomenon. Participants were recruited through e-mail and distributed through the first author's professional contacts.

Data collection

Individual, virtual semi-structured interviews of 1 h duration were conducted by the first author. The interview questions focused on the experiences of informal peer support, the conditions and context under which the peer support arose, and the meaning that participants constructed of the experience and for their career. Interviews were recorded and transcribed. Field notes, consisting of observations, emotional reactions and reflections, were generated by the first author after each interview.

Data analysis

Hermeneutic phenomenology data analysis involved the following stages: immersion, understanding, abstraction, synthesis and theme development, illumination and illustration of phenomena and integration and critique of findings.[16] The research team immersed in the data by reflecting both individually and then together on the transcripts, the coding and the reflective notes of the early interviews. Initial team discussions sought to develop codes and a preliminary understanding of the data. The transcribed interviews were coded by the principal investigator using NVivo software (Lumivero, Denver Colorado, USA). As the data collection proceeded, discussions moved towards a more abstracted view of the material,

guided by the hermeneutic circle.[16] This metaphor for understanding and interpretation is viewed as a movement between parts (data) and whole (evolving understanding of the phenomenon), each giving meaning to the other such that understanding is circular and iterative.[16] Thus, the team discussed their interpretations of the collective experiences of informal peer support in relation to an individual participant's experiences and the team's own evolving understandings, moving between individual stories and collective to identify the feature of helpful informal peer support.

Ethical approval

Ethical approval for the research was obtained from the University of British Columbia's Behavioural Research Ethics Board.

RESULTS

Eleven physicians from across Canada volunteered to participate. The nine women and two men ranged from 35 to 65 years of age, with between 7 and 39 years of medical practice experience. All participants were Canadian rural family physicians with a 'generalist' scope of practice, involving one or more of emergency medicine, obstetrical or hospitalist duties in addition to outpatient clinic services. All physicians worked in communities where they were the sole provider on call when covering a hospital service, and the majority had no access to specialists within the community. Some practitioners worked in extremely remote settings.

Eight participants reported critically ill patient encounters, one reported a surgical complication and one had an event related to clinic administration. One participant described ongoing gender discrimination as the stressor. For all participants, these experiences were emotionally laden, troublesome and severe.

Participants reported feeling overwhelmed, inadequate, shocked, responsible, isolated, incompetent, clumsy, in terrible pain and like a failure. Most participants questioned their competency and abilities and believed that they were flawed. Many participants described wanting to quit medical practice. Participants in this study commonly described feelings of shame but did not actually use the word. Shame is 'an intensely painful feeling or experience of believing we are flawed and therefore unworthy of acceptance and belonging'.[19] This definition by experienced shame researcher Brene Brown aligns well with what participants were describing and also with the lived experience of the physician authors. Shame is not the awareness of having done something wrong, but the experience of feeling wrong as an entire person, as described in the following quote:

> 'At the time, I definitely was having lots of thoughts of, like, "I'm bad at my job. How could I have done that?" A lot of thinking of "What did I do wrong?" You know, I went back and looked at the chart and thought…' Did I listen to her lungs or not? Maybe I didn't listen to her lungs. Oh my God, what if I didn't listen to her lungs?' (Participant 8, 35-year-old woman).

The peer support encounter most commonly arose because *the peer reached out* and inquired about the emotional well-being of the participant. Peers often had an awareness of the emotional distress of the participant because of physical proximity and initiated a conversation by asking simple questions about well-being. Peers who were not co-located were also valuable sources of support. On these occasions, a general inquiry about well-being was an opening that led to a deeper conversation.

> 'I was able to just put my head down on the desk and, you know, shortly after somebody stood up and walked over and put her hand on my back and said, "Oh, are you okay?" and sat and pulled up a chair and said, "What's happening?" And so, you know, that was huge' (Participant 5, 47-year-old woman).

Two participants reached out for emotional support. For one participant, her previous experience of receiving peer support gave her a new understanding of its importance, and she was intentional about seeking it on a subsequent occasion.

All participants received support from a peer with whom they had a pre-existing relationship, although not necessarily one with any emotional closeness. Peers were described as approachable, genuine, warm, loveable, positive, trustworthy and caring.

Most instances of support were brief. Conversations were often 5–10 min in duration. Conversations mostly took place in person or over the phone, but brief e-mails and texts of support were also considered valuable. A few peer support interactions involved a lengthy conversation or took place over multiple interactions. Five participants had conversations with multiple peers, all of whom were aware of the precipitating event because of proximity. This encounter is striking in its brevity:

> 'And (the specialist) texts me and he said, "Hey, keep your head up. It happened to me last January". And that's the only thing that he ever said to me about it. And it was – It was very, very helpful. It actually changed the course of the day for me for him just to say that' (Participant 2, 53-year-old man).

Participants described several features of the encounter that were valuable to them. They greatly appreciated a non-judgmental attitude and a peer who listened well. One participant described the peer as 'somebody who saw it with my eyes' (Participant 6, 62-year-old woman). Another said:

> 'She listened and understood. She did not try to solve anything or, you know, suggest solutions or anything. She was just present' (Participant 3, 47-year-old woman).

Peers were also highly valued for their intimate understanding of the situation, its gravity and the context of rural medicine. Local peers had detailed knowledge of the setting, such as available resources, the skills of the medical personnel involved and sometimes they even knew the patient. Peers who were not co-located also understood working in a resource-limited setting.

When peers shared their own past experiences of distressing events, they shared vulnerabilities and demonstrated the possibility of overcoming such difficulties, which helped participants realise this might be possible for them too. This helped practitioners understand that their experience was not unique and that they were not alone.

> 'What I found really helpful was them saying, "Oh, I've had a complaint. I've been sued. It happens to all of us". It was more of an empathy kind of "That's really hard. I know what you're going through because I've been there" type of response. And just a bit of that perspective about, you know, it's bound to happen in your career. You're not going to get everything right. We don't all get everything right, and it's okay' (Participant 8, 35-year-old woman).

Peers also often reminded participants that they were competent and valued, and this helped participants to reframe the situation, instead of just focusing on their perceived inadequacies.

The meaning participants attached to the support they received was significant given the brevity of the support encounter. The majority of participants described it as *vitally important*, and 5 volunteered that the support was essential to their ability to continue to practise medicine. Even brief conversations with peers helped physicians process shame. After the peer support encounter, practitioners no longer thought of leaving medical practice.

> 'The thing that's really moving to me about that experience is that 23 years later, I wouldn't have had these 23 years here without him in that moment' (Participant 11, 50-year-old woman).
>
> 'I think it's critically important. Like, I don't think I would last in what I do. Honestly, I probably would quit medicine' (Participant 4, 41-year-old woman).

Other perceived benefits of peer support varied by participant, such as 'growing confidence' and 'becoming a stronger person'. Some volunteered that they felt valued and affirmed as a whole person, not only as a physician. They were more likely to ask colleagues for help with clinical difficulties. All participants reported greater acceptance of themselves following peer support, despite self-perceived imperfections. They were more comfortable with the uncertainties of medical practice.

> 'She helped me feel like I was still valuable. That I still made a difference' (Participant 3, 47-year-old woman).

Participants also reported benefits from peer support that had a positive impact on others, including better connections with patients and medical colleagues. One participant reported having more compassion for patients after peer support, in that as a young healthy man he had previously felt invulnerable. Sharing his vulnerable

experience with a peer led to an understanding of how others might also feel vulnerable. Another reported providing better patient care. Some also felt motivated to reach out and support distressed colleagues.

> 'I realised how important those small, little gestures (of support) were to me, so if I can do those small, little gestures for somebody else – Even just to plant the seed of saying, 'I'm noticing you, you matter, you're important', then that might help them move on in their journey too' (Participant 3, 47-year-old woman).

DISCUSSION

Participants in this study described severe distress as a result of a workplace event. The most common precipitating event was a poor patient outcome. Regardless of responsibility, our participants perceived they had made errors in care. Exposure to very ill patients, and the need to care for them, often without the resources dictated by standards of care, is an expected part of rural practise and has been recognised as requiring clinical courage. Rural physicians have an awareness of the need for clinical courage but are perhaps less prepared to deal with the aftermath of such difficult experiences. Our participants, for the most part, did not intentionally seek the support of their colleagues to process the situation, and even seemed unaware that their experiences were not unique. Peer support was provided by a kindly peer who was genuinely interested in their well-being. The peer listened without judgement, provided validation and reframed the participant's perceptions. In sharing personal stories of their own experiences, they helped normalise it as a difficult but expected part of medical practice. Informal peer support enabled participants to move through shame, acquire wisdom and influence medical culture.

Moving through shame

Although most described it, no participants labelled their feelings as shame, suggesting that shame was unrecognised, or perhaps unspeakable, by participants. This is not surprising as the culture of medicine is mostly silent about these experiences. Shame is 'the elephant in the room: something so big and disturbing that we don't even see it, despite the fact that we keep bumping into it'.[20] Physicians may be particularly vulnerable to shame, as shame is associated with perfectionism (a trait common amongst physicians) and is exacerbated by toxic elements of medical culture.[21] Needing to ask for help has also been identified as a shame trigger for practitioners, which may explain reluctance to actively seek support.[22] Shame leads participants to question whether they belong in the profession, a response experienced by the majority of our participants. After a peer support conversation, those participants who had thought of leaving rural medicine no longer felt that they needed to or that they alone were at fault, which is indicative of moving through shame. Empathy, shared vulnerability and connection are antidotes to shame,[21] and all three elements were features of the peer support encounter.

Acquiring wisdom

Beyond surviving a difficult experience, receiving peer support was an opportunity for personal growth, as described by many participants. Informal peer support seems to have offered benefits which are known to help physicians, not only to move through emotionally difficult events, but also to go on to acquire 'post-traumatic growth' or wisdom.[23] This wisdom is facilitated by conversations with peers that are emotionally focused, include a peer who really listened, who acknowledged both the seriousness and emotional impact of the situation, and who helped put it in perspective by conveying that these events are expected experiences in a medical career.[9] Knowing one was not alone was also shown to be helpful, as was accepting personal imperfections. Interestingly, all of these benefits arose from peers with no formal peer support training, but who appear to be deeply intimate with the meaning of the distressing experience and simply reached out. Aspects of informal peer support, such as the source and timing of the support, may be contributing factors.

Shifting medical culture

Informal peer support offers a way to mitigate the toxic elements of medical culture. Peers reached out to initiate support at a time when it was most needed. Peers also signalled a willingness to engage in a difficult topic of conversation, and this helped participants overcome some of the cultural

barriers to meaningful dialogue, such as the culture of silence, the need for perfectionism and the tendency to ignore suffering. Both peer and participant needed to be willing to be vulnerable for the support encounter to take place, creating an encounter outside of usual cultural norms. Each of these small shifts, if successful, increases the likelihood of them happening again, as suggested by participants reporting an intention to reach out to other struggling physicians after receiving peer support themselves.

Implications

The variable nature of the informal peer support encounter, in terms of relationship to the peer, insights of the peer, timing and method of communication and specific support provided, point to the value of informal peer support. Some of these relational and contextual aspects cannot be replicated with formal support programmes.

Expanding the circle of care to include coworkers need not be onerous. Simple questions such as 'How are you feeling?' and 'Are you okay?' can make a big difference to a struggling colleague. Short conversations that may arise from these queries can have significant impacts on recipients. Small offers of support resulted in surprisingly magnified outcomes for recipients. Importantly, our data suggest that the barriers are reduced for future encounters once a participant experiences helpful informal peer support.

Physicians should seek opportunities to reach out to colleagues who seem distressed. Such actions convey an understanding of the importance of emotional support, of the need to address shame and suffering, and the value of compassion. At the very least, peers serve as role models and normalise such conversations within the local medical culture,[21] setting the stage for informal peer support to flourish.

As informal peer support emerges from existing relationships, opportunities for physicians to gather and build connections are helpful. Once a colleague is recognised as kind and safe, peer support becomes possible. Administrative and medical leaders can facilitate this process by being intentional about creating the conditions that cultivate community at work.[24] Medical educators are also well placed to nourish informal peer support. Education on difficult topics such as medical error, vulnerability and shame could bring them out of the darkness and start to normalise such discussions.

Limitations

A limitation of this research is the inclusion of only participants with positive experiences of peer support and recruited through personal contacts. The small sample size may have limited our understanding of the lived experience of peer support, in that a larger sample size may have offered new perspectives not captured in this work. We do not know about the experience of those where an invitation was offered but not taken up or found to be unhelpful. Significantly more women than men took part, which could have skewed results. Furthermore, this study was of rural physicians, which make up only 8% of the physician workforce in Canada.[25] Although the same issues of workplace stressors and medical culture broadly apply, there are likely to be nuances of professional relationships and interactions that are context dependent. There is a need for more research on informal peer support, including exploring the perspective of the providers.

CONCLUSION

The current climate of healthcare, with multiple pressures on healthcare providers, and the attendant adverse consequences for both physicians and patients, requires us to take more action in support of practitioner well-being. Informal peer support enabled recipients to move through an emotionally difficult experience and even offered features which are known to support the acquisition of 'post-traumatic growth'. Informal peer support, with some nurturing, could become a more widely available and effective resource for practitioners. Practitioners, healthcare leaders and medical educators all have roles to play in enabling the conditions under which informal peer support could flourish.

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Original Article

Does proximity to a fertility centre increase the chance of achieving pregnancy in Northeastern Ontario?

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Abstract

Introduction: Northern Ontario has a population of approximately 800,000 people distributed over 806,707 km^2. Before 2018, the only fertility treatment centre in Northern Ontario was located in Thunder Bay; many patients travelled south for care. In 2018, the Northeastern Ontario Women's Health Network (NEOWHN) opened in Sudbury, providing fertility treatments to people living in Northeastern Ontario. The goal of this study was to determine if proximity to this new fertility centre increases one's chance of achieving pregnancy when undergoing fertility treatment. Secondary outcomes included the quantity and types of fertility investigations and treatments completed by patients.

Materials and Methods: A retrospective chart review was performed for all patients seeking fertility treatment at NEOWHN between January 2019 and December 2020. Traveling >100 km to access healthcare was considered to be a clinically significant determinant of health.

Results: Seven hundred and 5 patients were seen in consultation for fertility services at NEOWHN during the study period. One hundred eighty-one of 478 (37.9%) patients living <100 km from NEOWHN achieved pregnancy compared to 39 of 227 (17.2%) patients living >100 km from NEOWHN ($P < 0.01$).

Conclusion: Living in proximity (<100 km) to NEOWHN increased the likelihood that individuals in Northeastern Ontario would seek fertility services and would achieve pregnancy. Financial constraints and inaccessibility likely play a role in this, but further studies are needed to explain this difference.

Keywords: Health equity, *in vitro* fertilization, infertility, insemination, Northern Ontario, remote, rural

Résumé

Introduction: Le Nord de l'Ontario compte une population d'environ 800,000 personnes réparties sur 806,707 km^2. Avant 2018, le seul centre de traitement de la fertilité du Nord de l'Ontario était situé à Thunder Bay; de nombreux patients SE rendaient dans le sud pour recevoir des soins. En 2018, le Northeastern Ontario Women's Health Network (NEOWHN-le Réseau de santé des femmes du Nord-Est de l'Ontario) a ouvert ses portes à Sudbury, offrant des traitements de fertilité aux personnes vivant dans le Nord-Est de l'Ontario. L'objectif de cette étude était de déterminer si la proximité de ce nouveau centre de fertilité augmente les chances d'obtenir une grossesse lors d'un traitement de fertilité. Les résultats secondaires comprenaient la quantité et les types

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d'examens et de traitements de fertilité effectués par les patients.
Méthodes: Une étude rétrospective des dossiers a été réalisée pour tous les patients cherchant un traitement de fertilité au NEOWHN entre janvier 2019 et décembre 2020. Le fait de voyager >100 km pour accéder aux soins de santé a été considéré comme un déterminant de la santé cliniquement significatif.
Résultats: Seven hundred and 5 patients ont été vus en consultation pour des services de fertilité au NEOWHN pendant la période d'étude. One hundred eighty-one des 478 (37.9%) patientes vivant à moins de 100 km du NEOWHN ont obtenu une grossesse, contre 39 des 227 (17.2%) patientes vivant à plus de 100 km du NEOWHN ($P < 0.01$).
Conclusion: Le fait de vivre à proximité (<100 km) du NEOWHN augmente la probabilité que les habitants du Nord-Est de l'Ontario aient recours à des services de fertilité et obtiennent une grossesse. Les contraintes financières et l'inaccessibilité jouent probablement un rôle à cet égard, mais d'autres études sont nécessaires pour expliquer cette différence.

Mots-clés: Éloigné, équité en matière de santé, fécondation *in-vitro,* infertilité, insémination, Nord de l'Ontario, rural

INTRODUCTION

Approximately 1 in 6 Canadian couples experience infertility.[1] Infertility is defined as an inability to achieve conception after 1 year of regular intercourse without contraception.[2,3] Individuals struggling with infertility may seek assistance to achieve pregnancy through a variety of treatments including medical therapy, intrauterine insemination (IUI) and *in vitro* fertilization (IVF).[4]

Northern Ontario covers a vast land mass over 800,000 km^2 and has a population of almost 800,000 people.[5] Before 2018, this entire region was home to 1 fertility centre located in Thunder Bay, Northwestern Ontario. All patients living in Northern Ontario interested in infertility treatments and/or investigations were required to travel to Northwestern, Eastern and/or Southern Ontario. During this time, patients reported barriers to accessing these services, including the distance required to travel and financial constraints.[6]

On 25 October 2018, Northeastern Ontario Women's Health Network (NEOWHN) opened in Sudbury becoming the first fertility clinic to serve the patients of Northeastern Ontario. Since its inception, the clinic has offered a variety of services including diagnostic investigations, cycle monitoring, blood work and IUI.[7] IVF is not available at this site, but a partnership exists with a Toronto fertility clinic which offers IVF, allowing many of the associated tests and monitoring to be completed at NEOWHN.[7] Residents of Ontario are currently eligible for government-funded fertility services through the Ontario fertility programme. The programme allows patients access to unlimited IUIs and 1 funded IVF cycle. However, since the demand for IVF cycles exceeds the current funding, patients can wait 6 months up to 2 years for a funded IVF cycle. Many couples will choose to pay privately for quick access to IVF, spending up to $25,000 for embryo retrieval and genetic testing. Medication costs can range from a few hundred dollars to over $5000 for both IUI and IVF, further adding to the financial burden of accessing fertility treatments.

In Northern Ontario, patients who travel more than 100 km one-way to access medical care are eligible to receive a Ministry of Health Northern Health Travel Grant to help offset the transportation and accommodation costs incurred. One hundred kilometre is recognised as a significant distance to travel for specialist care.[8] The travel grant does not cover all costs of travel, including hours missed from work, leaving patients to pay out of pocket for many expenses associated with infertility investigations and/or treatments.[6,8]

The primary objective of this study was to determine if individuals seeking fertility treatment are more likely to achieve pregnancy if they live within 100 km of NEOWHN. It was hypothesised that patients living >100 km from NEOWHN are less likely to achieve pregnancy in comparison to patients who live <100 km. Secondary objectives included identifying if there are any differences in the quantity and types of fertility investigations and treatments pursued by patients based on their distance from the clinic.

MATERIALS AND METHODS

Design

This was a retrospective chart review of patients seeking infertility investigations and/or treatment at NEOWHN in Sudbury, Ontario. All new patient consultations at NEOWHN between January 2019 and December 2020 were considered for the study and were followed until August 2021. This 2-year window was chosen based on the opening of the clinic in October 2018, and a desire to ensure that at least 6 months had passed from the consultation to assess for investigations, treatments and potential pregnancy. The study received ethics approval from the Health Sciences North Research Ethics Board.

Study participants

Patients had to express a desire to achieve pregnancy at the time of the consultation to be included. Exclusion criteria included patients seeking oocyte cryopreservation, sperm banking and other (non-fertility) gynaecological issues. Patients were included in the retrospective review based on exclusion and inclusion criteria. Stratified sampling was used to divide the sample of patients into 2 groups based on how far they lived from the clinic. The local group was identified as having a permanent address <100 km from NEOWHN, and the travel group was identified as having a permanent address equal to or >100 km from NEOWHN. One hundred kilometre was chosen as the cut-off based on the government-recognised criteria for the Northern Health Travel Grant. For patients who did not live in fly-in communities, the driving distance to the clinic was calculated using the patient's postal code and the clinic address via Google Maps. For patients living in fly-in communities, the distance to the clinic was calculated by using the distance of road access plus the distance flown.

Data collection

Data were collected using the HIPPA-compliant software Accrue through Citrix Gateway. Sociodemographic and clinical variables were extracted from each patient record that met the inclusion criteria. Age, gender, body mass index (BMI), smoking status, nulliparity and relationship status were identified as the most important sociodemographic variables. If there was a same-sex couple both undergoing investigations, each patient was logged as a separate entry. Once all required data were extracted for statistical analysis, all identifying features were removed, and the patient was assigned a study ID number. If fertility investigations were completed at another facility within 12 months of the consult date at NEOWHN, fertility investigations were identified as 'complete.' Pregnancy was defined as any positive hCG [human chorionic gonadotropin] (home urine or serum hCG test) or ultrasound suggesting pregnancy.

The types of infertility were grouped into five categories: uterus/tubal, male factor, ovulatory, other and unexplained. The ovulatory category included polycystic ovary syndrome, advanced maternal age (>35 years of age), decreased ovarian reserve, poor follicle growth, anovulation during diagnostic testing defined as progesterone <10 nmol/L, antral follicle count <10 and anti-Mullerian hormone <1.5 pmol/L. Male factor was diagnosed as a total sperm count of <10 million or motility <40%. The 'other' category included endometriosis, subclinical thyroid, hypothyroidism, therapeutic donor insemination, same-sex couples and single patients. Patients that did not complete the recommended diagnostic investigations were included in the analysis and categorised as 'unexplained.'

The population of the area within a radius of 100 km of NEOWHN was based on data collected by Statistics Canada in the 2021 census and an online radius calculator.[9] The population was calculated by manually adding the census population of the Greater Sudbury area and its surrounding areas within 100 km. It was estimated to be approximately 200,000 people. The population of the rest of Northeastern Ontario (>100 km from NEOWHN) was determined by subtracting 200,000 from 557,000 (population of Northeastern Ontario according to census), resulting in 357,000 people.[5]

Data analysis

All data analyses were completed in IBM SPSS Statistics v 28 (IBM Corporation, Armonk, New York, USA). Demographic data were

reported using descriptive statistics. Continuous variables were compared using the Student's *t*-test. Categorical variables were compared using the Chi-squared test or Fisher's exact test. Statistical significance was defined as $P < 0.05$ for the primary outcome and secondary outcomes.

RESULTS

Of the 705 charts studied, all patients identified as female. There were no significant differences in mean age, smoking status, BMI, nulliparity or relationship status between the 2 groups [Table 1].

Patients living within 100 km of the NEOWHN were 4 times more likely to seek fertility treatment compared to patients living ≥100 km of NEOWHN [Table 2]. Diagnostic investigations to help identify the cause of infertility were more likely to be completed by the local group [Table 2]. This group was also more likely to complete all fertility investigations at NEOWHN compared to those in the travel group [Table 2].

The most common cause of infertility diagnosed in both groups was unexplained, followed by ovulatory issues [Figure 1]. Overall, there were no significant differences in the prevalence of infertility diagnoses between the 2 groups ($P > 0.05$).

The proportion of patients pursuing medicated cycles, IUI and IVF was similar between the local and travel groups [Table 3]. Rates of pregnancy achieved between both groups were also comparable, with no statistically significant differences.

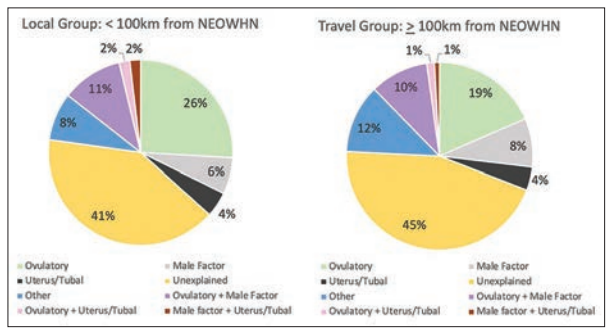

Figure 1: Infertility diagnoses.

	Local group: <100 km from NEOWHN (*n*=478), *n* (%)	Travel group: ≥100 km from NEOWHN (*n*=227), *n* (%)	*P*
Ovulatory	124 (25.9)	42 (18.5)	0.030
Male factor	30 (6.3)	19 (8.4)	0.307
Uterus/tubal	21 (4.4)	9 (4.0)	0.792
Unexplained	194 (40.6)	102 (44.9)	0.274
Other	40 (8.4)	27 (11.9)	0.136
Ovulatory + male factor	51 (10.7)	23 (10.1)	0.828
Ovulatory + uterus/tubal	9 (1.9)	3 (1.3)	0.590
Male factor + uterus/tubal	9 (1.9)	2 (0.9)	0.316

NEOWHN: Northeastern Ontario Women's Health Network

Table 1: Demographics

Variable	Local group: <100 km from NEOWHN (*n*=478)	Travel group: ≥100 km from NEOWHN (*n*=227)	*P*
Sex (*n*)			
Female	478	227	-
Male	0	0	-
Other	0	0	-
Age at consult, mean (SD)	32.0 (5.3)	31.7 (5.2)	0.477
Smoking status, *n* (%)			
Yes	80 (16.7)	32 (14.1)	0.370
No	398 (83.3)	195 (85.9)	0.370
BMI, mean (SD)	30.4 (8.3)*	31.3 (7.5)†	0.194
Nulliparous, *n* (%)			
Yes	223 (46.7)	120 (52.9)	0.123
No	255 (53.3)	107 (47.1)	0.123
Relationship status, *n* (%)			
Female/female	32 (6.7)	14 (6.2)	0.791
Female/male	425 (88.9)	197 (86.8)	0.413
Female/other	20 (4.1)	16 (7.0)	0.106
Unknown	1 (0.2)	0	-

*Based on 422 patients, †Based on 178 patients. NEOWHN: Northeastern Ontario Women's Health Network, SD: Standard deviation, BMI: Body mass index

Overall, after the initial consultation at NEOWHN, patients living within 100 km of the clinic were more likely to achieve pregnancy than patients who lived ≥100 km from the clinic [37.9% vs. 18.1%, $P < 0.01$, Table 4]. NEOWHN was able to treat patients with medicated cycles (at home or with monitoring at the clinic), IUI or partial monitoring for IVF. These treatments were defined as pregnancy 'with assistance'. Of all the pregnancies recorded in the data set, patients living within 100 km of the clinic were more likely to achieve pregnancy without assistance from NEOWHN, whereas those who lived farther from the clinic were more likely to achieve pregnancy with assistance from NEOWHN [$P < 0.01$, Table 4].

DISCUSSION

Within a 100 km radius of NEOWHN, there are approximately 200,000 people and approximately 357,000 people in the remainder of Northeastern Ontario.[5] Despite its smaller population size, patients living within 100 km of NEOWHN (Local Group) accounted for more than two-thirds of the total fertility consultations completed at the clinic between 2019 and 2020. Patients in the local group were 4 times more likely to seek fertility consultation than those living ≥100 km of NEOWHN (travel group). It is unknown how far individuals would be willing to travel to access fertility services offered by

Table 2: Infertility diagnostic investigations

	Local group: <100 km from NEOWHN	Travel group: ≥100 km from NEOWHN	*P*
Number of patients seeking fertility consultation (*n*)	478	227	-
Prevalence of patients seeking fertility consultation by location (%)	0.24*	0.06†	<0.01
Previously underwent fertility investigations, *n* (%)	138 (28.9)	93 (43.2)	<0.01
US and BW complete, *n* (%)	313 (65.5)	114 (50.2)	<0.01
SIS/HSG complete, *n* (%)	306 (64.0)	122 (53.7)	<0.01
Semen analysis, *n* (%)	241 (50.4)	94 (41.4)	0.025
All investigations completed, *n* (%)	231 (48.3)	85 (37.4)	<0.01
All investigations completed at NEOWHN, *n* (%)	187 (39.1)	17 (7.5)	<0.01

*Based on population of 200,000 people, †Based on population of 357,000 people. NEOWHN: Northeastern Ontario Women's Health Network, US: Ultrasound, BW: Blood work, SIS: Saline infusion sonohysterogram, HSG: Hysterosalpingography

Table 3: Fertility treatments and pregnancy outcomes

	Local group: <100 km from NEOWHN, *n* (%)	Travel group: ≥100 km from NEOWHN, *n* (%)	*P*
Medicated cycles			
Proceeded with treatment	122/478 (25.5)	57/227 (25.1)	0.906
Pregnancy	33/122 (27.0)	19/57 (33.3)	0.486
IUI			
Proceeded with treatment	98/478 (20.5)	38/227 (16.8)	0.237
Pregnancy	21/98 (22.4)	8/38 (21.1)	0.962
IVF			
IVF consult	55/478 (11.5)	21/227 (9.3)	0.367
Proceeded with treatment	31/55 (56.4)	12/21 (57.1)	0.951
Pregnancy	13/31 (41.9)	3/12 (25.0)	0.302

NEOWHN: Northeastern Ontario Women's Health Network, IUI: Intrauterine insemination, IVF: *In-vitro* fertilization

Table 4: Overall pregnancy rates

	Local group: <100 km from NEOWHN (*n*=478), *n* (%)	Travel group: ≥100 km from NEOWHN (*n*=227), *n* (%)	*P*
Achieved pregnancy after consult	181/478 (37.9)	41/227 (18.1)	<0.01
Achieved pregnancy with assistance from NEOWHN	67/181 (37.0)	31/41 (75.6)	<0.01

NEOWHN: Northeastern Ontario Women's Health Network

NEOWHN; however, this finding aligns with international studies that highlight how living near a treatment centre dramatically increases the accessibility rates to fertility services.[10]

NEOWHN offers virtual consultations and so travel to the clinic for the initial visit was not anticipated to be a major barrier to seeking a consultation. However, patients with infertility may be aware that fertility investigations and treatments are an onerous time commitment influencing their decision to proceed with a consultation to begin with.[11] Diagnostic testing alone can require at least 6 clinic visits, including the consultation and follow-up. Treatment cycles for IUI require 2–3 visits per month, IVF cycles require 5–7 visits per month and cycle monitoring for both medicated and unmedicated cycles can require up to 3–4 visits per month. Clinic appointments at NEOWHN are scheduled during regular business hours, requiring most patients to take time off during work, which is further compounded by distance from the clinic. The Northern Health Travel Grant does not provide reimbursement for missed work or cover fuel costs for the first 100 km of mileage.[8] Subsequently, investigations and treatments become time-consuming and costly for patients when they have multiple appointments. Travel is also complicated by the difficult geography Northern Ontarians must traverse to reach NEOWHN. Poor weather, fatal collisions, wildlife, and non-linear single-lane highways come with the territory of driving in Northern Ontario. It is unknown if the significant difference in the proportion of patients pursuing initial consultations was related to travel, finances, geography or other unidentified factors that may impact fertility.

Completion of all fertility diagnostics was more likely to be carried out by the local group and completed at NEOWHN. Diagnostics need to be updated every 1–2 years, so although many patients in the travel group had already completed fertility investigations in the past, most required updated diagnostics to counsel for treatment options. There was minimal variation between the rate of patients in both groups who proceeded with medicated cycles, IUI and IVF after their initial consultation with NEOWHN. Medicated cycles can be done from home, allowing the patient to stimulate egg production and induce ovulation without having to visit the clinic frequently. NEOWHN has always offered Ontario Telemedicine Network (OTN) virtual consults and follow-up appointments for patients outside of Sudbury. Twenty-five per cent of patients, regardless of proximity to the clinic, proceeded with medicated cycling with timed intercourse. Pregnancy rates were similar. We believe treatment at home was chosen in the same proportions by the 2 groups because the distance to the clinic is not relevant. Patients can safely take medications without regular monitoring and can receive their prescriptions through fax to their pharmacy after an OTN visit.

IUI is a funded fertility treatment that typically involves oral medications and 3 visits to NEOWHN per cycle (1 month period).[12] Most patients start treatment with IUI before proceeding to IVF; however, there are cases where patients proceed directly to IVF, such as low sperm counts and blocked fallopian tubes.[13] Unexpectedly, there was a non-significant decrease in the proportion of patients from the travel group who chose to proceed with at least 1 IUI cycle at NEOWHN. Half of the patients in the travel group proceeding with IUI had previously undergone infertility treatments in the past compared to 30% of patients in the local group. We theorize that this prior exposure increased this group's understanding of how onerous investigations and treatments are, and subsequently, their commitment to fertility treatments such as IUI before the initial consultation at NEOWHN.[11] As well, this group may have been motivated to try IUI again, before proceeding to IVF, which would require even more travel and likely substantially more financial burden. Pregnancy rates amongst both groups were similar. This was expected as patient diagnoses and demographics were similar between both groups.

Forty-three of 705 patients proceeded to IVF treatment. IVF is commonly pursued by patients who are unsuccessful with IUI and medicated cycles.[11] In Ontario, only 1 IVF cycle is funded, and this does not include all costs, most notably medications.[12] We do not know the difference in personal finances from our study population since household income and third-party insurance coverage for medications are not recorded in our patient charts. NEOWHN does provide patients with local monitoring of follicular growth and

endometrial lining assessment for IVF, reducing the number of trips outside of Sudbury. However, IVF treatment requires the patient to travel to Toronto for egg retrieval and embryo transfer. Our results demonstrated similar rates of patients choosing to proceed with an IVF referral and to follow through with IVF as a treatment option. With similar pregnancy rates amongst the patients who proceeded with medicated cycles and IUI, and similar rates of infertility diagnoses between the groups, the aforementioned is not surprising. There was a non-significant difference in positive pregnancy rates after IVF treatment. The study is underpowered due to the small sample size for this secondary objective, and many patients were still in the process of IVF treatment at the study cut-off date.

Overall, patients <100 km from NEOWHN had statistically higher rates of pregnancy after their initial consultation. Pregnancy rates for patients undergoing fertility treatment of any kind (medicated, IUI and IVF) were similar between the groups. Interestingly, almost 25% of all patients in the local group were able to achieve pregnancy without treatment, compared to 4% of patients in the travel group. We believe the explanation of this may be multifactorial: Underreporting of pregnancies for patients out of town who likely contacted their local health team for pregnancy tests/ultrasounds; over half of the local group had unknown diagnoses and may have been referred to NEOWHN prematurely due to proximity of the clinic; and increased rates of tubal patency testing completed by patients in the local group which can assist with conception.

Limitations

There are limitations to our study. The total populations used in Table 2 to determine the point prevalence of fertility consultations were based on estimated values. In our data set, the proportion of patients seeking consultation at NEOWHN from within 100 km of the clinic was 4 times higher. We do not know the reasons why fewer couples outside of the 100 km radius of the clinic did not seek consultations at NEOWHN or if they sought consultations at other clinics. This underrepresentation of patients from outside of the 100 km radius of the clinic could affect pregnancy rates reported in Table 4. Pregnancy rates are based on diagnostic tests performed at NEOWHN, local health centres and patient self-reporting. All patients who achieve pregnancy after consultation at NEOWHN are asked to inform the clinic of their pregnancy, regardless of the method of conception. Contacting the clinic is not a requirement, therefore it is probable that the number of patients identified as having achieved pregnancy after consultation is higher than documented. New patient consults from 2019 to 2020 were followed until the end of August 2021. It is likely that there were patients who were able to achieve pregnancy beyond August 2021. Finally, Sudbury was often identified as a COVID-19 hotspot for Northeastern Ontario throughout the pandemic, so it is possible that patients chose to have their investigations completed elsewhere or proceed with their fertility journey at a later date.[14,15]

CONCLUSION

Living in rural and remote areas is a barrier to accessing healthcare services. Individuals living <100 km from NEOWHN were 4 times as likely to seek out fertility services in comparison to those living ≥100 km from NEOWHN. After the initial consultation, rates of pregnancy for patients were significantly higher for those living within 100 km of NEOWHN. We observed similar rates of pregnancy for patients during medicated, IUI, and IVF cycles, regardless of distance from the clinic. While the reason is likely multifactorial, we suspect geography and financial constraints pose an uncorrected barrier to seeking medical care. Our study demonstrates that within this northern community, increased distance from a major northern hub further affects access to fertility services. Further studies are needed to fully understand why the discrepancy in untreated pregnancy rates occurs.

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ORIGINAL ARTICLE

Lessons learned from the COVID-19 pandemic: The importance of physician leadership in responding to rural community ecosystem disruptions

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Abstract

Introduction: The COVID-19 pandemic presented an unprecedented challenge for rural family physicians. The lessons learned over the course of 2 years have potential to help guide responses to future ecosystem disruption. This qualitative study aims to explore the leadership experiences of rural Canadian family physicians during the COVID-19 pandemic as both local care providers and community health leaders and to identify potential supports and barriers to physician leadership.

Methods: Semi-structured, virtual, qualitative interviews were completed with participants from rural communities in Canada from December 2021 to February 2022 inclusive. Participant recruitment involved identifying seed contacts and conducting snowball sampling. Participants were asked about their experiences during the COVID-19 pandemic, including the role of physician leadership in building community resilience. Data collection was completed on theoretical saturation. Data were thematically analysed using NVivo 12.

Results: Sixty-four participants took part from 22 rural communities in 4 provinces. Four key factors were identified that supported physician leadership towards rural resilience during ecosystem disruption: (1) continuity of care, (2) team-based care models, (3) physician well-being and (4) openness to innovative care models.

Conclusion: Healthcare policy and practice transformation should prioritise developing opportunities to strengthen physician leadership, particularly in rural areas that will be adversely affected by ecosystem disruption.

Keywords: Change, leadership, physician, rural

Résumé

Introduction: La pandémie de COVID-19 a représenté un défi sans précédent pour les médecins de famille en milieu rural. Les leçons tirées au cours des deux

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années écoulées peuvent aider à orienter les réponses aux futures perturbations de l'écosystème. Cette étude qualitative vise à explorer les expériences de leadership des médecins de famille ruraux canadiens pendant la pandémie de COVID-19, en tant que prestataires de soins locaux et chefs de file de la santé communautaire, et à identifier les soutiens et les obstacles potentiels au leadership des médecins.

Méthodes: Des entretiens qualitatifs virtuels semi-structurés ont été réalisés avec des participants issus de communautés rurales du Canada entre décembre 2021 et février 2022 inclus. Le recrutement des participants a consisté à identifier des contacts de base et à procéder à un échantillonnage boule de neige. Les participants ont été interrogés sur leurs expériences durant la pandémie de COVID-19, notamment sur le rôle du leadership des médecins dans le renforcement de la résilience des communautés. La collecte des données s'est achevée après saturation théorique. Les données ont été analysées thématiquement à l'aide de NVivo 12.

Résultats: Soixante-quatre participants provenant de 22 communautés rurales de quatre provinces ont pris part à l'étude. Quatre facteurs clés ont été identifiés pour soutenir le leadership des médecins en faveur de la résilience rurale en cas de perturbation de l'écosystème: (1) la continuité des soins, (2) les modèles de soins en équipe, (3) le bien-être des médecins et (4) l'ouverture à des modèles de soins novateurs.

Conclusion: La politique de santé et la transformation des pratiques devraient donner la priorité au développement d'opportunités pour renforcer le leadership des médecins, en particulier dans les zones rurales qui seront négativement affectées par la perturbation de l'écosystème.

Mots-clés: Changement, leadership, médecin, ruracl

INTRODUCTION

The COVID-19 pandemic has had an unprecedented impact on health service delivery around the globe. In Canada, rural communities are supported by small and often vulnerable health systems that have had to adapt and innovate to support their populations in the face of disruption. These approaches have been met with variable success throughout the pandemic. More importantly, the pandemic is only one of a range of potential ecosystem disruptions that challenge rural community sustainability and resilience, including related disasters such as wildfires, floods and heat domes.[1,2] Rural physicians can have an important leadership role in communities and may be well-positioned to support community resilience in the face of these challenges.[3]

Existing literature examining physician leadership during natural disasters and emergencies is limited, particularly in the context of rural Canadian practice. National physician organisations such as the Canadian Association of Physicians for the Environment and the Society of Rural Physicians of Canada (SRPC) have published resources, reports and guidelines on the need for physician engagement in change advocacy[4-6] but research exploring real-world physician leadership in these contexts is scant. As emergencies increase in frequency and severity, the accompanying health effects will create conditions in which physicians and medical professionals bear a greater burden of responsibility to advocate for and support patient health.[7] Rural communities will disproportionately face significant challenges caused by the changing environment and ecosystem conditions compared to urban centres, particularly those dependent on resource-based economies that may be vulnerable.[8] With rural healthcare reaching points of crisis across much of Canada, it is vital that strategies to support rural community resilience to further health and threats are implemented.

The Climate Change and Ecosystem Disruption Adaptation Responses in Rural Canada (CCEDARR) study was funded through the Co-RIG Phase II competitive grant by the Foundation for Advancing Family Medicine and the Canadian Medical Association. CCEDARR was designed to explore the ways in which rural physicians have participated in and contributed to rural community sustainability during the pandemic and the implications for responding to future ecosystem disruptions.

The purpose of this research is to gain a more comprehensive understanding of the role of rural physician leadership in responding to the threats of the COVID-19 pandemic and ways in which this leadership can be leveraged to build the resilience of rural communities in Canada.

METHODS

A qualitative exploratory approach was undertaken to engage rural physicians and community members in semi-structured virtual interviews on their perspective of resilience during the COVID-19 pandemic. Participants were initially identified via seed contacts, also referred to as initial contacts,[9,10] from the SRPC and CCEDARR study co-investigators, and then recruited through a snowball sampling strategy, a commonly employed method in qualitative research.[11,12]

Semi-structured qualitative interviews 30–80 min in duration were offered through Zoom™ or phone to participants between December 2021 and February 2022 inclusive. The interview guide included questions about experiences providing care during the COVID-19 pandemic, perceptions of community resilience and tools and tactics to support resilience during ecosystem disruption. For the purposes of this paper, community resilience is defined as the 'combination of resistance to frequent and severe disturbances, capacity for recovery and self-organisation and the ability to adapt to new conditions'.[13] Leadership is defined in the context of family physician practice per the CanMEDS-Family Medicine framework as, '(…) actively contribut (ing) to implementing and maintaining a high-quality health care system, and take responsibility for delivering excellent patient care through their activities as clinicians, administrators, scholars and/or teachers'.[14]

Interviews were audio recorded with participants' written informed consent and recordings were securely transcribed by Scriptastic Transcription Services. The interviews were conducted by the CCEDARR principal investigator, research coordinator, and research assistant. Semi-structured interview questions underwent an iterative process, guided by emerging themes. Recruitment continued until sufficient data were collected to allow for rigorous interpretation, which was determined through research team consultation. Virtual community forums were completed to show study results to participants and seek community feedback on the interim thematic analysis.

Interview data were thematically analysed in NVivo 12 using Braun and Clarke's approach to inductive coding.[15] Two researchers reviewed the transcripts to become familiar with the data and annotated initial codes relevant to the research questions. Interviews were uploaded to NVivo 12 and coded by a team of 7 rural health researchers. A codebook was created by the research team and each reference was coded under a relevant node by sentiment, 'positive', 'negative', and 'neutral.' A coding protocol guided the research team to ensure consistent thematic definitions and coding consistency. At least 2 research team members independently coded each interview transcript and intercoder reliability was established through running coding consistency queries. References that were double-coded were compared for congruence to ensure consistent data interpretation.

RESULTS

Sixty-five participants were recruited from 22 rural communities across 4 Canadian provinces [Table 1].

Rural physician leadership was an important component of the perceived resilience of rural communities to the COVID-19 pandemic in some, but not all, communities. The contribution that rural physicians made depended on several system-level attributes that were captured in our qualitative work. These included the longitudinal relationships the physicians had with their communities, the model of care provided, the resilience of the health system they practised under, and the physicians' emphasis on social accountability. Almost all participants highlighted relationships as the most protective factor for community resilience during the COVID-19 pandemic. Physician and healthcare provider participants relied on strong relationships with

Table 1: Distribution of participant characteristics

Participants	Frequency (*n*=65), *n* (%)
Role	
Rural physician	27 (41.5)
Healthcare team member	8 (12.3)
Mayor or town councilor	8 (12.3)
Community member	22 (33.8)
Province	
Alberta	11 (16.9)
British Columbia	33 (50.8)
Ontario	18 (27.7)
Saskatchewan	3 (4.6)

colleagues to support their individual resilience, emphasised provider-patient relationships as a tool to enhance trust in medical leadership, and leveraged several avenues of communication to encourage community collaboration.

System-level supports for physician leadership

Continuity of care

Participants underscored the impact of longitudinal relationships on trust building between care providers and patients, particularly during times of health crises including the COVID-19 pandemic. A community member shared that a long-time physician was 'kind of a local hero' and a 'deeply, deeply appreciated man in town' (Community member, AB). One physician noted that many of their patients have known them 'since we were children' and that they have 'grown up together for years' having 'delivered their children and palliated their grandparents' (Physician, ON). This continuity of care was cited as a protective factor in the physician's perception of trust in their medical leadership and expertise. Communities that had continuity of care through 'trusted long-term family physicians' (Physician, BC) were frequently better suited to navigate the evolving pandemic, playing a role, particularly in addressing vaccine hesitancy and compliance with public health measures. As one community member put it,

> *The local healthcare workers (…) have done just an absolutely wonderful job on providing information and ensuring that people who are making a choice to get vaccinated have the best information available and can make an informed decision* (Community member, BC).

Conversely, not having a consistent physician and relying on locum care provision was described as 'affecting the level of trust' (Physician, ON) between care provider and patient during the pandemic. Physician participants who were less established within their communities, or provided locum coverage to remote locations, more frequently expressed that their leadership was less influential on patient outcomes and community-level resilience during the pandemic.

The challenges of recruitment and retention of physicians to rural practice as determining factors of capacity to create longitudinal relationships and tackle the challenge of lack of access to primary care were highlighted in almost every interview. Communities that had some existing capacity and infrastructure to support incoming physicians may have been more attractive for recent graduates of medical programs:

> *They're not coming to a place that needs three physicians they [won't] be run off their feet the minute they walk into town and I think that that's had some appeal for the cohort of new grads that we've been able to recruit over time* (…) *People aren't burnt out, they can be supported* (Physician, ON).

By leveraging a provincial recruiting grant, one community attracted a full complement of physicians, citing the 'work-life balance' and 'desire to be a part of a family health team structure' (Healthcare team member, ON) that provide mentorship and learning opportunities as two major recruiting factors. Participants shared that these strategies for recruitment, which were established before the pandemic, contributed to their community's capacity to respond effectively and provide quality 'relationship-based care' (Physician, ON) during the pandemic.

Team-based care models

Supportive professional environments for healthcare provision demonstrated success in building collective resilience. Primary care networks and family health team structures increased capacity to support both physicians and patients through prolonged and strenuous health crises. These models of team-based care delivery were primarily facilitated through alternative-payment plan (APP) models that support allied health professionals to work alongside physicians in a greater capacity without the direct overhead requirements of private practice clinics. The desire to build a system of 'full team-based care culture' (Physician, BC) was reiterated by strategies enacted by care teams that integrated community social services, education professionals, youth networks, and local businesses during the pandemic to support community well-being. One physician addressed the strengths of this collaborative healthcare team structure,

> *It very much helps when you're not expected to work in a silo kind of environment. We have this broad responsibility when the people you're shoulder to*

shoulder with recognize the importance of that responsibility and support you to do it (Physician, ON).

Several participants addressed the need for a non-hierarchical approach to leadership, with the voices of physicians, the healthcare team, and community shaping care delivery,

It's a very intentional physician community that we wanted to create, and we base ourselves around a consensus model, so that everyone's word is valued, no matter if you've been here for 20 years or you just started (Physician, ON).

Participants indicated that while physicians played an important leadership role during the COVID-19 pandemic response activities, the co-creation of strategies with the healthcare team, and with input from patients and families more broadly, was central to fostering a culture of team-based care. Effectively understanding and responding to the needs of the community required a 'physician perspective articulated around a patient-centric and family-centric model' (Physician, BC).

Physician well-being

Many physicians spoke of the toll that the COVID-19 pandemic had taken on their wellbeing as well as tactics that they implemented to reduce burnout and support personal resilience. One physician noted the 'COVID fatigue' that 'takes up bandwidth' (Physician, ON) and limits their capacity to care for their patients. Another commented on the effect that COVID-19 has had on community wellbeing,

This pandemic has burned, not just doctors out, but everybody out, we're tired, we don't want to do this anymore. You don't want to treat each other like this or be treated like this anymore (Physician, AB).

Other participants, namely those who worked in team-based care environments, described the importance of an 'effective team' with 'built-in capacity' to support physicians and allied healthcare professionals to explore interests outside of clinical practice as a tool to keep the team 'resilient both as individuals and as a clinical group' (Physician, ON). This theme of building an effective team to support physician well-being was echoed by another participant,

We were resilient because we could recognize and allow for people to take a break when they were burnt out (…) We feel comfortable and we feel safe with each other that we can actually admit that we need time, or we're feeling kind of overwhelmed (Physician, ON).

Openness to innovation in care models

Communication and virtual care

Clear, concise messaging from physicians during the pandemic was highlighted by nearly all participants as vital in supporting resilience and an effective community-level response. Clinic staff often leveraged existing social media platforms to share updates on public health directives and COVID-19 cases. The ease with which messaging can be shared amongst the community has made social media 'one of the most useful tools' (community member, BC) during the pandemic. One physician, in reference to the physician-patient relationship, shared how the shift to social media communication from 'more traditional means of communication (...) will change irreversibly' (Physician, ON).

Participants also described the value of virtual care in providing timely health services to their rural patients. It allowed care providers to 'continue to function [and] run the clinic for inpatient care despite the pandemic' and to deliver routine services such as prescription refills and referrals in a 'safe or relatively safe environment' (Physician, SK).

Many physicians implemented procedures to call their more vulnerable or isolated patients on a daily or weekly basis during lockdowns to ensure that they had access to care services and social supports. Similarly, phone consultations with physicians and clinic staff at different stages of the vaccine rollouts assisted patients in booking their vaccination appointments and created a space for open dialogue on vaccine hesitancy.

While many healthcare provider participants supported the transition to virtual care, others were hesitant to recommend this mode of service delivery due to concerns that an over-reliance on this system would deteriorate patient–provider relationships,

I think virtual care only does certain things. I think the personal relationship between people and their physicians is important (Community member, BC).

However, the inclusion of virtual care as a tool of an adaptable and versatile primary care system at a local level is something that many providers hope to see continued post-pandemic,

> *I'm really hoping they allow us to continue to including virtual work in the way we operate (…) that's uncertain but, I think it should be structural and we'd like to see that way* (Physician, ON).

Opportunities for leadership

Rural generalists faced unique leadership challenges during the COVID-19 pandemic and coordinating an effective community response was supported by a willingness to go beyond traditional clinical duties. One participant commented, 'I think rural medicine is always unique in that the physician certainly is not limited to solely in-office patient care, we really do wear a million hats' (Physician, ON). They reflected that the pandemic expanded their knowledge and experience in public health, social media management and marketing to encourage engagement with public health messaging from the clinic. Several physicians commented on taking on a greater community education and advocacy role when the first COVID-19 vaccines became available to encourage uptake in their communities:

> *The frequency of meetings really needed to go up.(…) It was helpful for staff to feel like there was a foundation of decision-making, that it wasn't all on their shoulders to try to ad-lib what to say on the phone when patients were asking difficult things of them* (Physician, ON).

Notably, APP physicians interviewed more frequently felt as though it was a remuneration structure that was conducive to non-clinical work and increased their flexibility to participate in community engagement. 'APP definitely does give that luxury (…) because you're not losing any income' (Physician, ON).

Many physicians assumed leadership roles in organising clinic and community responses to the COVID-19 pandemic. The pressures on rural health service provision required physicians and health clinics to be responsive and adaptive in novel ways. One community set up a field hospital in a local school in case the hospital became overwhelmed with COVID patients 'given the distances and the kind of population that we could be facing if an outbreak was in the summer versus winter' (Physician, ON). Another community held weekly radio segments 'where (a) healthcare provider goes on-air and talks about health and promotion-related topics' (Community member, ON) which was able to be repurposed to provide locally relevant COVID-19 information. In the initial stages of the pandemic, rural communities were contending with both a limited understanding of the necessary measures to protect themselves as well as a lack of access to key medical provisions and services. Several participants pointed to the need for collaborative approaches to learn from past experiences in pandemics and ecosystem disruptors. One participant reflected,

> *We've had 3 SARS viruses in 20 years, there's going to be a fourth, there's going to be a fifth. And we're going to have to learn how to use the information that we have at hand to make better choices about how we respond to public health crises* (Physician, AB).

Community members and municipal leadership from communities who deemed themselves resilient during the pandemic shared that physicians were strong leaders when it came to planning and preparedness, which ultimately increased their level of trust. A community member noted that 'the doctors (…) throughout the pandemic have been invaluable' (Community Member, BC).

However, there remains a gap in rural physician leadership and involvement in climate change advocacy and future ecosystem disruption preparedness. One physician stated that 'when we come to things such as climate change… we don't have the rulebook' (Physician, SK) while discussing the availability of climate change continuing education for rural doctors. This sentiment was echoed by a number of physicians we spoke with about training for climate engagement and advocacy. The misalignment between physician education on tools of advocacy, including tactics to discuss the impacts of the changing climate on patient's health, and the training they receive through medical school or continuing education was clear. When asked about their involvement in climate action, a majority of the physicians interviewed reported not actively participating or being marginally involved through 'medical waste reduction programs and (…) implement (ing) recycling programs' (Physician, ON).

DISCUSSION

Physician leadership in rural communities can have a significant impact on the resilience of the community against threats such as the COVID-19 pandemic. The ability of rural physicians to contribute to sustaining community health and mitigating challenges to community stability go beyond providing competent care and include planning, innovating, and adapting health services and community strategies as needed.[14] These actions are facilitated by mutually respectful long-standing relationships between physicians and the community they serve, a healthcare system that supports team based models, including physician involvement in activities beyond direct clinical care, and health system acceptance and support for innovation and adaptation in the face of new and evolving challenges.

The results of this study align with the described roles of medical expert, leader, communicator, health advocate, and collaborator as outlined in the CanMEDS competencies framework.[16] Similarly, the data are consistent with the core principles of family medicine, specifically the longitudinal relationships between physicians and their patients, and physicians acting as a resource to their community.[17,18]

As community-based practitioners, family physicians are uniquely positioned to provide guidance for many community-specific needs. This exploratory work has captured a plurality of perspectives on the experience of rural communities during the COVID-19 pandemic. We found that physician leadership was vital in liaising with health authorities, accessing key medical resources, and providing timely and accurate public health messaging during the pandemic. Participants who saw their communities as resilient were more often those who referred to their physicians as competent and trustworthy leaders.

To deliver services closer to home for rural patients, physicians often embrace a generalist approach that involves a greater scope of practice than may be typically employed by urban care providers.[19] In addition to clinical duties, physicians shared that there was a greater expectation that they would liaise with municipal bodies and provide community-wide public health resources and recommendations during the pandemic. These increased expectations were met by many physicians in communities we spoke with and were supported by resilient health structures, strong longitudinal relationships, and dedication to social accountability.

Existing care models, including financial and human resources, influence the degree to which physicians can participate in leadership opportunities and pandemic response. Physicians that we spoke with who are remunerated on an APP model felt as though they had capacity to participate in duties external to direct clinical care such as meetings with municipal leadership and engagement with public health advocacy. Existing studies support the importance of adequate compensation for physician leadership duties, particularly for those working under fee-for-service models.[20] Further exploration into this finding is presented in an accompanying publication.

While existing studies address the importance of physician leadership in developing effective health systems,[20-25] there is a gap in literature exploring the role of physician leadership in ecosystem disruption preparedness, particularly in rural settings. The COVID-19 pandemic compelled physicians and healthcare professionals into positions of leadership that often required decision-making based on limited information and creative innovation to support community wellness. Physicians we spoke with often felt unprepared and under-educated to provide health leadership in times of climate crises. This hesitancy to participate in climate action at a local level is juxtaposed with the increased national and global focus on health professionals as resources for health-related climate advocacy. This finding is supported by existing scholarship exploring the inclusion of climate change in medical curricula.[26] Further research into the role physicians play in ecosystem disruption preparedness is required, particularly as the frequency and intensity of climate threats increases.

Policy and practice recommendations [Table 2]

Table 2 outlines policy and practice recommendations for supporting physician leadership and climate advocacy. These recommendations have been generated through the exploratory thematic analysis of participant

Table 2: Policy and practice recommendations		
Theme	Sub-theme	Recommendation
System-level supports for physician leadership	Continuity of care	Develop and implement rural health service models that support continuity of care and flexibility for providers to engage in community sustainability activities
	Team-based care models	Support team-based models of healthcare provision to optimise a potential scope of practice to meet the needs of the community
	Physician well-being	Consider advantages of APP models that support broad social accountability in rural settings
Openness to innovative care models	Communication and virtual care	Explore coordinated and independent channels of physician communication to the community
		Implement blended models of virtual and in-person care provided by local practitioners
	Opportunities for physician leadership	Implement more extensive climate change curriculum in medical school and encourage further education for practising physicians
		Create resources for physicians to engage in discussions with patients, and their wider community, about the health effects of climate change
		Strengthen physician advocacy for climate change adaptation in rural communities and encourage physician participation in climate adaptation planning at the local and regional level

APP: Alternative-payment plan

experience and gaps identified in current physician leadership frameworks.

Limitations

This exploratory study was hypothesis-gathering rather than hypothesis-testing and consequently, the qualitative data require further research to test results and generalisability. Due to challenges in participant recruitment, only *4* Canadian provinces were represented in the data. The locations included in this study vary in terms of the number of COVID-19 cases, COVID-19 related deaths, pandemic impacts on service delivery and access, COVID-19 response, degree of rurality and provincial or regional health structure. However, these data also provide real-world insight into various care settings across multiple provinces.

CONCLUSION

The results of this work suggest that physicians who were engaged in contributing to community resilience, trusted by their patients, supported in a team-based care environment, and open to innovative care models were those who were deemed successful leaders by their communities during the COVID-19 pandemic. Rural physicians should be encouraged and supported to take on leadership roles during health-related crises, particularly as the pervasive effects of climate change and ecosystem disruption intensify.

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The occasional ultrasound-guided haematoma block and reduction for distal radius fractures

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Point-of-care ultrasound (PoCUS) in emergency medicine represents a key piece of diagnostic and therapeutic equipment. Commonly used in procedures such as central venous catheterisation, arthrocentesis, regional anaesthesia and paracentesis, PoCUS has been shown to reduce complications and increase success rates of these and other procedures.[1]

Musculoskeletal injuries such as distal radius fractures are frequently treated in emergency departments (EDs). In all patient populations, distal radius fractures are the most common fractures, but in young and elderly patients, they are especially prevalent. Injuries of this kind are painful and often require interventions that prolong the patient's ED stay.[2]

Typically, distal radius fractures are confirmed with radiography [Figure 1] and managed with procedural sedation and analgesia. In resource-limited settings, bedside fluoroscopy is rarely available and closed reduction proceeds with manual palpation of the fracture and associated angulation. The adequacy of reduction is confirmed clinically, and the patient is casted before being sent for post-reduction radiography. Swelling, body habitus and pain can influence palpation, making the reduction more difficult. Moreover, this method is resource-intensive, time-consuming and has increased risks of procedural sedation. PoCUS-guided haematoma blocking and PoCUS-assisted reduction can help clinicians, reduce patient discomfort and increase ED flow without requiring personnel and time needed for procedural sedation.

Here, we present the use of PoCUS in a haematoma block to facilitate the closed reduction of distal radius fractures and describe its advantages over procedural sedation with closed reduction without PoCUS.

INDICATIONS

Closed reduction of a fracture of the metaphysis or diaphysis

CONTRAINDICATIONS

Open fracture
Infection overlying the injection site

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SONOANATOMY

The fracture site can be identified with a high-frequency linear transducer probe scanning proximal to distal [Figure 2]. The bony step-off and associated fracture haematoma can be seen [Figure 3]. This view is used during the haematoma block as well, during and after closed reduction, to assess the adequacy of reduction.

The haematoma block, which entails directly instilling local anaesthetic into the site of fracture haematoma, has been shown to be a safe and effective anaesthetic method for fracture reductions in adult and paediatric populations.[3-6] The literature suggests that haematoma blocks result in significantly shorter length of stay in the ED compared to procedural sedation and are non-inferior in terms of pain scores pre and post-reduction, without increasing rates of adverse events, including loss of adequate fracture reduction.[3,4,6-10] Compared to procedural sedation, haematoma blocks also have the advantage of requiring less monitoring for respiratory distress during the procedure, which is a critical consideration in resource-limited environments or high-risk patients.[9,10] Use of PoCUS can mitigate difficulties and facilitate an effective and less invasive method of anaesthesia compared to procedural sedation. The technique for ultrasound-guided haematoma block (described below) allows for direct visualisation of the haematoma and may improve the success of achieving an adequate haematoma block.

As mentioned previously, PoCUS facilitates the haematoma block in distal radius fracture but is also a valuable tool in guiding satisfactory fracture reduction. PoCUS provides real-time visualisation of fracture reduction at the bedside, thus allowing the physician to make adjustments, rather than having to repeat the process after post-reduction X-rays are completed. This real-time feedback improves patient care by potentially reducing anaesthesia/sedation time, patient discomfort and resource utilisation.[11] In addition to these indirect metrics, PoCUS-guided fracture reduction has also been shown to reduce rates of repeat reduction, improve post-reduction volar tilt and decrease subsequent operative rate.[11-14]

Figure 1: Pre-reduction anteroposterior (a) and lateral (b) X-ray of a distal radius fracture demonstrating significant impaction and angulation.

Figure 2: Linear transducer probe overlying the fracture site.

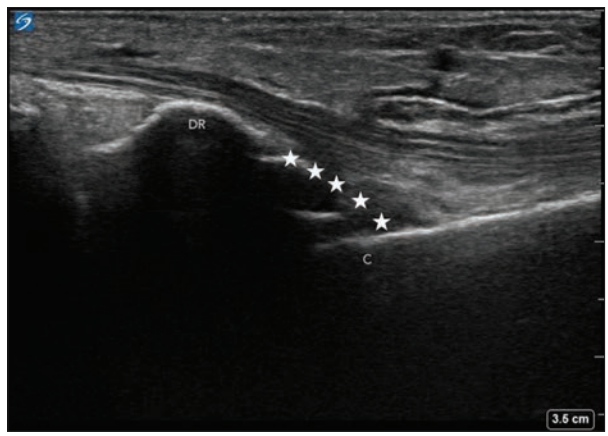

Figure 3: Sonographic anatomy of distal radius fracture (longitudinal view). DR: Distal radius, C: Proximal cortex, ★: Fracture haematoma.

EQUIPMENT

- PoCUS machine with 7.5 MHz linear transducer

- Chlorhexidine swabs
- One percent lidocaine
- 10 millilitre syringe
- 22–25-gauge needle
- Sterile ultrasound probe.

PROCEDURE

Patients often undergo radiography before manipulation. Furthermore, ensure adequate analgesia prior to the procedure.

US-guided haematoma block[7,13]

1. Landmark the fracture site by visualising interruption and angulation of the bony cortex; this is best done by scanning proximally and longitudinally tracing the radius along the dorsal forearm with the probe until the fracture haematoma is identified as a discontinuity in the normal hyperechoic bone line along the radius [Figures 2 and 3]. Placement of a towel under the wrist can aid in patient comfort and allows for better visualisation
2. After locating the fracture site, the skin should be prepped with chlorhexidine. Clean the ultrasound probe and place a sterile cover over the transducer to maintain a clean field. Place sterile ultrasound jelly on the probe
3. Draw up 10 mL of one percent lidocaine in a syringe, then place the needle on the syringe
4. Re-locate the haematoma again and insert the needle in-plane proximally to distally at an appropriate trajectory to reach the fracture haematoma. The needle can be seen as it passes through the skin, overlying tissue and into the fracture haematoma [Figure 4]
5. Once the tip is seen entering the fracture haematoma, a small amount of blood should be aspirated to confirm placement
6. Five to ten millilitres of local anaesthetic should then be injected to the fracture haematoma. Inject slowly and warn the patient they may feel pressure and a burning sensation
7. Redirect the needle proximally and inject a further 2.5–5 mL just superficial to the periosteum
8. If a concomitant ulnar styloid fracture is present, the same procedure above can be repeated by tracing the ulna to identify an ulnar styloid fracture haematoma and injection of 2.5–5 mL of local anaesthetic
9. After the injection is complete, gently massage/compress the soft tissues overlying the injection site to assist anaesthetic dispersal
10. Wait 10–15 min before attempting any reduction to allow the local anaesthetic to take effect.

US-guided distal radius fracture reduction

1. Proceed with your method of reduction of choice. Adequate distraction of the fracture can be aided by placing the patient in a vertical finger trap and counter-traction. Some discomfort may be felt and is usually tolerable for several seconds
2. To confirm reduction, place the linear probe over the fracture as above. Often, there is an improvement in alignment and angulation with counter-traction alone
3. Repeat this step after each reduction attempt. Once the alignment is adequate [Figure 5], proceed with casting and moulding and repeat radiography [Figure 6].

Pitfalls

1. Inserting needle too proximally and unable to direct it into haematoma

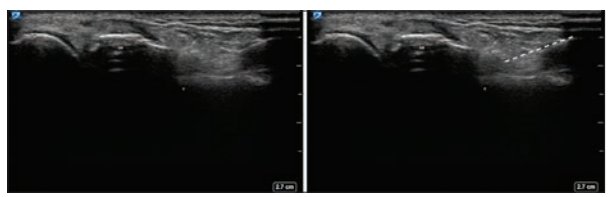

Figure 4: Point-of-care ultrasound visualisation of a needle entering the distal radius fracture haematoma (left image). Dotted line representation of needle path (right image). DR: Distal radius, C: Cortex.

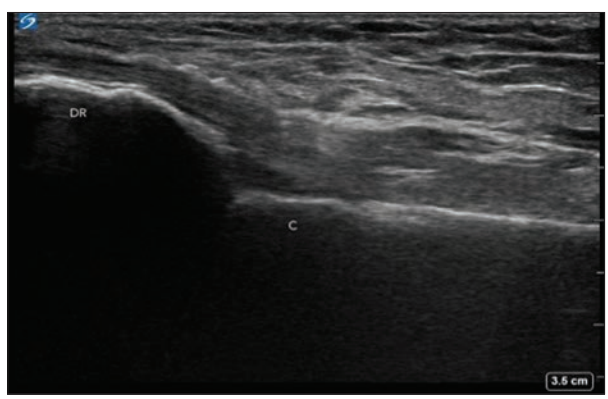

Figure 5: Point-of-care ultrasound image of distal radius fracture reduction (longitudinal view) demonstrating reduction of angulation. DR: Distal radius, C: Cortex.

Figure 6: Post-reduction anteroposterior (a) and lateral (b) X-ray of a distal radius fracture demonstrating restoration of impaction and angulation.

2. Omitting anaesthesia of the proximal periosteum
3. Not waiting long enough.

Pearls

1. Gentle compression of soft tissues post-injection will increase distribution of anaesthetic
2. Wait at least 10–15 min after injection. Go and see another patient. The anaesthetic effect continues to increase during the first 30 min
3. Some discomfort may be felt at the extremes of fracture reduction. This is usually tolerable for the few seconds it takes to achieve alignment. Also, blocking a concomitant ulnar styloid fracture may improve overall procedural success
4. Do not proceed with a reduction if anaesthesia is inadequate or the patient is highly anxious. Consider anxiolysis or light sedation to facilitate reduction.

CONCLUSIONS

Using PoCUS in the context of distal radius fractures provides good quality patient care, good fracture reduction outcomes and improves flow through ED compared to procedural sedation and reduction. The method described here is particularly useful in resource-limited settings where a single procedural sedation may overwhelm departmental resources.

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Clinical Case Report

Early diagnosis of peripartum cardiomyopathy with multi-organ point-of-care ultrasounds in an Australian rural primary care setting

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INTRODUCTION

Peripartum cardiomyopathy (PPCM) is an unusual type of heart failure, frequently characterised by the development of dilated cardiomyopathy with global systolic dysfunction, during the final 4 weeks of gestation and the first 5 months post-partum.[1] It is associated with high mortality and morbidity if early diagnosis and treatment cannot be achieved.

The diagnosis of PPCM depends on the understanding of maternal history, high clinical suspicion of PPCM and echocardiographic findings. Rural primary care physicians in Australia often provide continuous obstetric care, including antenatal, intrapartum and post-partum care. Furthermore, multi-organ point-of-care ultrasounds (PoCUSs) have recently gained popularity in a variety of medical specialties, such as anaesthesiology, emergency, internal and family medicine. Multi-organ PoCUSs have also been demonstrated to be effective in the diagnosis of undifferentiated dyspnoea. Therefore, rural primary care physicians can play a vital role in expediting the diagnosis and management of PPCM when multi-organ PoCUSs are used as part of clinical examinations.

This case describes the process, in which PPCM is diagnosed early in a rural primary care setting when multi-organ PoCUSs are performed by a rural primary care physician.

CASE REPORT

History

A 21-year-old aboriginal woman, gravida 3 para 3, presented at her routine 6-week post-partum follow-up appointment with a 3-day history of gradual onset of dyspnoea that had been progressively worsening. She had delivered a male newborn uneventfully through vaginal delivery. Her past medical, family and antenatal histories were unremarkable. She denied fever, cough, headache, sore throat, chest pain, lower limb swelling and pain, immobilisation and skin rashes. Her urination and bowel functions were normal.

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Examination

On physical examination, she was alert and oriented to time, place and persons. Her body temperature was 36.5°C with blood pressure 152/105 mmHg, heart rate 96 beats/min (bpm), respiratory rate 20 breaths/min and oxygen saturation on room air 97%. Her chest examination showed bilateral normal breath sounds without audible wheeze, crackles or stridor. Her heart sounds were normal, without any extra sounds or murmurs. Elevated jugular venous pressure and bilateral pitting oedema in the lower limbs were not found. Head, neck, throat and abdominal examination were unremarkable.

Electrocardiography (ECG) showed normal sinus rhythm with a heart rate of 100 bpm without ST-segment changes and/or T-wave inversion.

Multi-organ PoCUSs at the bedside were performed, including focused echocardiography, lung, lower extremity venous and inferior vena cava (IVC) ultrasounds. The focused echocardiography showed dilated left ventricle with global reduction of contractility: left ventricular ejection fraction (LVEF) of 30% [Figure 1]. There was no pericardial effusion. Right ventricle and atrium were normal in size and contractility. The lung ultrasound (LUS) revealed bilateral diffuse B-lines in anterior and lateral lung fields [Figure 2]. The lower extremity venous ultrasound did not show deep venous thrombosis. Her IVC was measured around 1.6 cm with inspiratory collapse >50%. The ultrasound findings demonstrate the ability of PoCUS to help make an early diagnosis when physical examination may have been less suggestive of this serious illness.

The provisional diagnosis was PPCM, with differential diagnoses of pulmonary embolism, ischemic cardiomyopathy and non-cardiogenic forms of pulmonary oedema.

Treatment and outcome

She was then admitted into a local rural hospital under the care of the same primary care physician for further investigations, including point-of-care blood gas, renal function and troponin tests. The venous blood gas showed normal levels of sodium (138; normal range: 136–146 mmol/L), potassium (4.6; normal range: 3.7–4.7 mmol/L), bicarbonate (23; normal range: 22–32 mmol/L), lactate (1.4; normal ranges: <2.0 mmol/L), haemoglobin (122; normal range: 120–150 mmol/L), PH (7.36; normal range: 7.30–7.40) and pCO_2 (42; normal range 40–50 mmHg). Her renal function test revealed normal urea (6.3; 3.0–7.0 mmol/L), creatinine (71; normal range: 45–90 µmol/L) and estimated glomerular filtration rate (>90; normal range: >60 ml/min/1.73 m^2). Her point-of-care troponin I was <3 ng/L (normal range: <26 ng/L).

An urgent telehealth cardiologist consultation was requested. After reviewing her ECG, focused echocardiography and LUS, bisoprolol 5 mg daily, furosemide 40 mg twice daily and valsartan 40 mg daily were initiated according to the recommendations from the cardiology team. Her condition remained stable overnight in the local rural hospital, and she was subsequently transferred to a tertiary referral hospital under the care of the cardiology team.

A plain chest radiograph later showed slightly increased heart size and interstitial markings with blunting costophrenic angles, which suggested mild-to-moderate heart failure [Figure 3]. A computed tomography pulmonary angiogram showed the same interstitial features and pleural effusion as the plain chest radiography but no evidence of acute pulmonary embolism. A comprehensive echocardiography study showed similar findings to those obtained from the previous bedside-focused echocardiography.

To determine the severity of heart failure and guide the subsequent treatment, the pro-brain natriuretic peptide was ordered

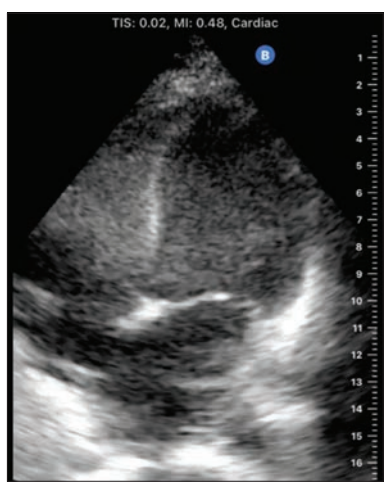

Figure 1: Dilatation of left ventricle as seen from an apical four-chamber view.

on the 2nd day of hospital admission and the result was 13,499 ng/L (normal range: <126 ng/L). Circulating antibodies, including viral serology (human immunodeficiency virus, hepatitis B and hepatitis C) and immunological tests, namely antinuclear antibodies, extractable nuclear antigens, cytoplasmic antineutrophil cytoplasmic antibodies, anti-double-stranded DNA antibodies and complement C3 and C4, were also performed to exclude the heart failure associated with viral infections and autoimmune diseases. The results of these antibodies were negative.

The heart failure management was continued. According to local heart failure clinical guidelines, valsartan was subsequently changed to sacubitril (24.3 mg)/valsartan (25.7 mg) twice a day and bisoprolol was increased to 10 mg daily. Furosemide was ceased on the 3rd day of hospital admission. She was discharged on day 7 of hospital admission. Her presenting symptoms were completely resolved at that time.

She then returned to her regular primary care provider for ongoing clinical review and contraception consultation. She decided to have an etonogestrel 68 mg subdermal implant before bilateral tubal ligation. Her repeated echocardiography 6 months post-partum showed normal LVEF (70%) and complete resolution of dilated cardiomyopathy.

DISCUSSION

PPCM is a rare maternal disease, which is characterised by a new development of idiopathic, frequently dilated, cardiomyopathy with global reduction of left ventricular contractility, between the last 4 weeks of gestation and the first 5 months post-partum.[1] If a cardiomyopathy develops before the third trimester, pregnancy-associated cardiomyopathy is then considered.

Its incidence can vary from 1 in 100 live deliveries in Nigeria,[1] 1 in 300 live deliveries in Haiti,[2] to 1 in 20,000 live deliveries in Japan.[3] These discrepancies may be due to genetic predisposition, selenium deficiency in Nigeria,[4] high incidences of pre-eclampsia and zinc deficiency in Haiti[5,6] and overdiagnosis of PPCM due to lack of ultrasound facilities in resource-limited countries. However, genetic predisposition seems to be a primary cause for higher incidence and prevalence of PPCM amongst African American women than Caucasian women in the United States. African American women constitute almost 50% of the PPCM cases,[7] and the incidence of PPCM in African American women is 3–4 times higher than in Caucasian women.[8]

The pathophysiology of PPCM remains uncertain. It may involve a vasculohormonal mechanism and genetic predisposition that triggers endothelial inflammation and cardiac muscle cell apoptosis.[9,10] The known risk factors include maternal age (older than the age of 30 years), multiparity, ethnicity, multigestational pregnancy, gestational hypertensive disorder, prolonged tocolytic therapy with β-agonists and obesity.[11,12]

Individuals with PPCM generally present with non-specific signs and symptoms, including

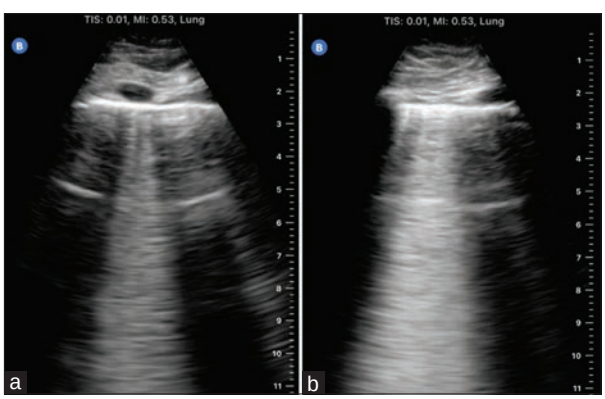

Figure 2: Point-of-care ultrasound lung ultrasound abnormalities in both lungs. (a) Regular pleural line and confluent B-lines in the right lung, (b) Regular pleural line and multiple B-lines in the left lung.

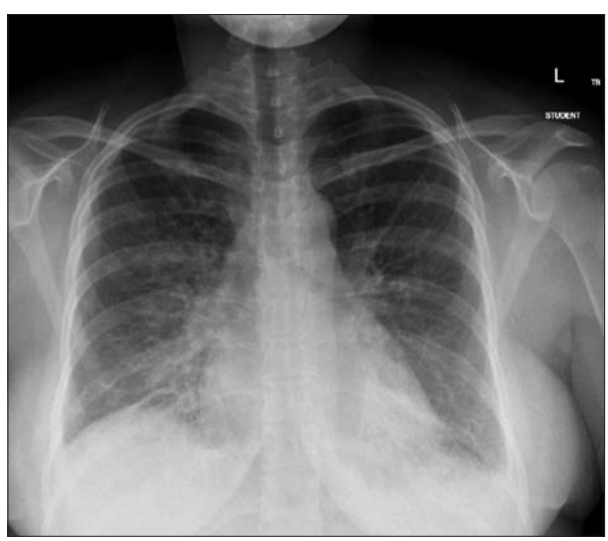

Figure 3: Plain chest radiograph, showing an enlarged heart size and increased interstitial markings.

dyspnoea on physical exertion, orthopnoea, paroxysmal nocturnal dyspnoea, tachycardia, peripheral oedema and fatigue. Some of these symptoms, including dyspnoea, peripheral oedema and fatigue, are also commonly observed in healthy pregnant women during the third trimester. Although these non-specific symptoms may make the diagnosis of PPCM difficult during the pre-natal period, most PPCM presentations are found post-partum.

The current diagnostic criteria are based on clinical history and echocardiography. PPCM can be diagnosed when individuals, with no previous personal and/or family cardiac diseases, develop idiopathic cardiac failure with LVEF <45% between the last 4 weeks of gestation and post-natal 5 months.[13]

Early diagnosis relies on the understanding of maternal history, high clinical suspicion of PPCM and echocardiography. Rural primary care physicians in Australia frequently provide continuous maternal care, including antenatal, intrapartum and post-partum care. Therefore, a rural primary care physician can facilitate the early diagnosis and management of PPCM. Together with clinical history and physical examination, multi-organ PoCUS – a combined ultrasound study of focused echocardiography, LUS, IVC diameter measurement with or without respiratory collapsibility and lower extremity venous study, have been shown to shorten the diagnostic time and improve the diagnostic accuracy in differentiating the causes of acute dyspnoea, primarily including acute decompensated cardiac failure, pneumonia, pleural effusion, acute respiratory distress syndrome, pneumothorax and pulmonary embolism.[14]

The management of post-partum PPCM is primarily based on general cardiac failure treatment guidelines. Immediate medical management includes adequate oxygenation, salt and fluid restriction and reduction of cardiac preload and afterload through pharmacotherapies, which mainly consist of angiotensin-converting enzyme inhibitors, angiotensin receptor-neprilysin inhibitors, β-blockers and mineralocorticoid receptor antagonists.[15] These medications have been shown to improve survival and quality of life and reduce the need for hospitalisation. Individuals with more severe clinical conditions may require non-invasive or invasive ventilation, inotropic support, intra-aortic balloon pump, left ventricular assist device or extracorporeal membrane oxygenation.[16]

The prognosis of PPCM has improved significantly from the mortality rate of 35%–50%[17,18] in the 1970s to around 2%–16% in recent studies.[11,19,20] It has also been shown in recent studies that the LVEF will normalise (LVEF ≥50%) in 50%–80% of women with PPCM in the first 12 months.[20-22] The improvement of prognosis may be due to increased recognition of this disease and better management of cardiac failure.

Despite the normalisation of LVEF, subsequent pregnancies are associated with adverse maternal outcomes, including relapse of PPCM, symptoms of heart failure and death. In comparison with women with the eventual recovery of left ventricular systolic function (LVEF ≥50%), those with persistently impaired left ventricle ejection fraction (LVEF <50%) have higher risks of adverse outcomes and all-cause mortality at 5 years (53.3% vs. 20.0% and 13.3% vs. 3.3%, respectively).[23] Current guidelines from the European Society of Cardiology and the American Heart Association recommend that subsequent pregnancy is a contraindication in women with ongoing left ventricular systolic function impairment (LVEF <50%).[15,24]

CONCLUSION

This is the first reported case, in which PPCM was diagnosed with the multi-organ PoCUS in a rural primary care setting. PPCM should be considered an important differential diagnosis in a peripartum woman who has no previous personal and/or family cardiac history and presents with undifferentiated dyspnoea. Early diagnosis and treatment can improve the prognosis. Furthermore, the case represents the important role a rural primary care physician can play in the early diagnosis of PPCM during post-partum follow-up and the benefits of multi-organ PoCUS in the diagnosis of acute undifferentiated dyspnoea in resource-limited areas.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form,

the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Ethics of rural care

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I'm curious how much
of a doctor's duty lies
in empathy, how much with rural care,
if not you, then who?
But the ethics
Do not explain this gap.
How I should practice,
aware of the silent
cries echoing from rural or
remote homes—calls
that start in hearts, tread
with an urgent pattern,
filled with the weight
of all that is seen and unseen,
until it resonates with me alone.
The question persists:
Will I make an impact?
If not me, who else?
Urban seduction, yet, rural
refuge,
it is a dance I dance.

Reflecting on the nuanced intersection of medicine, empathy and geographical disparity, this poem sheds light on the unique challenges and ethical considerations that characterise medicine in rural communities. I illustrate the duty healthcare providers have in resource-poor areas, with often neglected populations, and the dilemma of urban versus rural practice. The poem draws attention to the critical importance of empathy in healthcare – a trait that becomes even more essential in the rural context where one doctor may play a larger role in a patient's care. The imagery of 'silent cries echoing from rural or remote homes' serves as a symbol for the unspoken burdens and the urgent needs of these vitally underserved communities, often overlooked and underreported. The poem is a contemplative exploration of the importance of empathetic practice, recognising the responsibility physicians bear, particularly in underserved areas. This aims to remind clinicians to stay true to the essence of medicine - empathy, and commitment to their patients, no matter the circumstances. It also emphasises the crucial role healthcare professionals play in mitigating health disparities and underscores the imperative of broader societal and policy-level conservation that must be had, to support rural care.

Poem and commentary was written while author was still a medical student.

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Erratum: Pan-Canadian licensure: Potential impact on the rural physician workforce

In the article titled Pan-Canadian licensure: Potential impact on the rural physician workforce, published on pages 13-19, Issue 1, Volume 29 of Canadian Journal of Rural Medicine[1], the name of the authors is written incorrectly in the hard copy version in the How to cite this article section as Carmela B, Louise S, Kyle S. instead of Bosco C, Sweatman L, Sue K.

The How to cite this article section should read correctly as

How to cite this article: Bosco C, Sweatman L, Sue K. Pan-Canadian licensure: Potential impact on the rural physician workforce. Can J Rural Med 2024;29:13-19.

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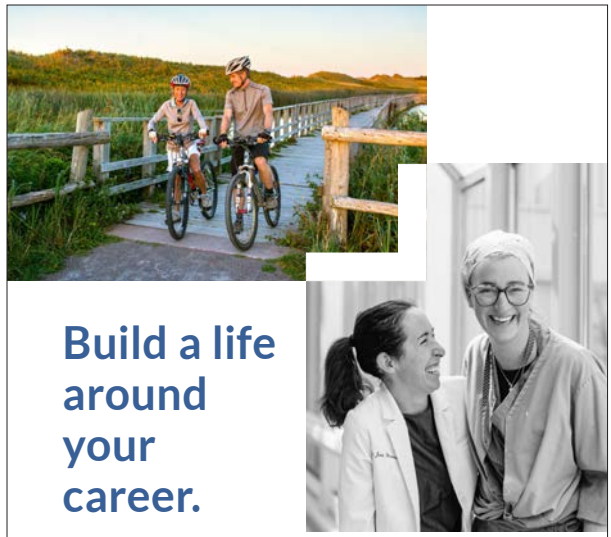

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