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Original Research

How early clinical experiences in rural communities influence student learning about rural generalism considered through the lens of educational theory

Comment les premières expériences cliniques dans les communautés rurales influencent l'apprentissage des étudiants en matière de généralisme rural sous l'angle de la théorie de l'éducation

Brian M Ross,[1,2] Kirstie Taylor,[1] Brenton Button,[3] Frances Kilbertus,[1] Erin Cameron[1,2]

[1]Northern Ontario School of Medicine University, Ontario, Canada; [2]Faculty of Education, Lakehead University, Ontario, Canada; [3]University of Winnipeg, Manitoba, Canada.

Correspondence to: Professor Brian M. Ross, Division of Medical Sciences, Northern Ontario School of Medicine University, 955 Oliver Road, Thunder Bay, Ontario Canada P7B 5E1; Tel. +1 807 766 7394; email: bross@nosm.ca

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Abstract

Introduction: Rural communities have poorer health compared to urban populations due partly to having lesser healthcare access. Rural placements during medical education can equip students with the knowledge and skills to work in rural communities, and, it is hoped, increase the supply of rural physicians. It is unclear how students gain knowledge of rural generalism during placements, and how this can be understood in terms of place-based and/or sociocultural educational theories. To gain insight into these questions we considered the experiences of pre-clerkship medical students who completed two mandatory four-week rural placements during their second year of medical school.

Methods: Data was collected using semi-structured interviews or focus groups, followed by thematic analysis of the interview transcripts.

Results: Rural placements allowed students to learn about rural generalism such as breadth of practice, and boundary issues. This occurred mainly by students interacting with rural physician faculty, with the effectiveness of precepting being key to students acquiring knowledge and skills and reporting a positive regard for the placement experience.

Discussion: Our data show the central role of generalist physician preceptors in how and what students learn while participating in rural placements. Sociocultural learning theory best explains student learning, while place-based education theory helps inform the curriculum. Effective training and preparation of preceptors is likely key to positive student placement experiences.

Résumé

Introduction : Les communautés rurales sont en moins bonne santé que les populations urbaines, en partie parce qu'elles ont moins accès aux soins de santé. Les stages de médecine en milieu rural peuvent permettre aux étudiants d'acquérir les connaissances et les compétences nécessaires pour travailler dans les communautés rurales et, on l'espère, augmenter le nombre de médecins y travaillent. On ne sait pas clairement comment les étudiants acquièrent des connaissances sur le généralisme rural au cours de leurs stages, et comment cela peut être compris en termes de théories éducatives socioculturelles et/ou basées sur le lieu de travail. Pour répondre à ces questions, nous avons étudié les expériences d'étudiants en médecine au pré-clinique qui ont effectué deux stages obligatoires de quatre semaines en milieu rural au cours de leur deuxième année d'études de médecine.

Méthodes : Les données ont été recueillies au moyen d'entrevues semi-structurées ou de groupes de discussion, suivis d'une analyse thématique des transcriptions des entrevues.

Résultats : Les stages en milieu rural ont permis aux étudiants de se familiariser avec le généralisme rural, notamment l'étendue de la pratique et les questions de limites. L'efficacité du préceptorat est essentielle pour que les étudiants acquièrent des connaissances et des compétences et qu'ils aient une expérience de stage positive.

Discussion : Nos données témoignent du rôle central que jouent les médecins généralistes précepteurs quant au contenu et modes d'apprentissage des étudiants lorsqu'ils participent à des stages en milieu rural. La théorie de l'apprentissage socioculturel est celle qui explique le mieux l'apprentissage des étudiants, tandis que la théorie de la formation fondée sur le lieu contribue à orienter le programme d'études. Une formation et préparation efficace des précepteurs est probablement la clé d'une expérience de stage positive pour les étudiants.

Introduction

Living a healthy life is a fundamental human right that partly relies on timely, high quality health care.[1,2] Persons living in rural areas, however, have generally lesser access to health services, a phenomenon that crosses both national boundaries and medical disciplines.[3,4] Termed health inequity, such disparities contribute to a higher burden of disease for rural communities; this includes increased rates of mortality and morbidity, and lower life expectancy.[3,5-7] This geographically based health inequity is partly due to a lack of physicians who are both trained to work in rural communities and have the desire to do so.[2,8] Medical education is one way to alleviate this shortage of practitioners by training rural generalists who are equipped with the knowledge and desire to deliver healthcare in rural communities.[9,10] Such contextualized training is a common way to provide socially accountable medical education, that is, education which is designed to meet the healthcare needs of the served population.[11]

Aiming to increase the number of rural physicians, many medical schools offer opportunities for students to reside and learn in rural communities during their training program.[12] Early clinical experiences which occur rurally increase students knowledge, interest and regard for rural generalism, as well as the likelihood of the student situating their future practice there.[13-16] Such placements allow students to develop an understanding of rural generalism, and the skills and attitudes needed for successful rural practice. Furthermore, rural placements also provide a broad-based clinical-educational experience which increases student confidence and self-efficacy.[15,17-19]

An effective placement will therefore allow students to develop both cognitively and affectively as potential future rural generalist physicians. In this paper we will explore the teaching and learning of rural generalism during early clinical placements, both in terms of where and from whom students learn, and the pedagogy employed. That we need students to learn not just about medicine, but rural medicine, is because context heavily modifies practice; medicine is, and always must be, about somewhere in particular even if that detail is often obscured.[9] That being said, students are present in place with their clinical teachers (preceptors). We have therefore enquired about how learning occurs during these placements in terms of two existing educational theories: place-based and sociocultural education.

Place-based education theory[20] focuses our understanding of how students experience and learn about living and working in different communities, be these geographic or virtual in nature. Place-based education also is particularly suited to addressing the needs of people and places who face inequity.[21,22] In terms of rural generalism, a pedagogy of place equates to understanding how rurality impacts and modifies medical practice and the life of physicians.[23] In addition to their contact with the place is the student's interaction with the generalist physicians who guide their learning. This aspect of the experience may be better described by sociocultural educational theory,[24] which views learning as a social process between teacher and student, leading, in this case, to the student gaining an understanding of rural generalism and the development of an identity for rural practice.[25] Both place- and socio-cultural aspects of learning may contribute to the development of the identity of rural citizen/physician that guides students into rural practice, however it is presently unclear as to the relative importance of each, something which we consider in this study.

To answer these questions, we have utilized the early rural experiences occurring at the Northern Ontario School of Medicine University (NOSMU). NOSMU serves as the medical school for a large (approximately 800,000 square kilometres), mostly sparsely populated region, comprising some small cities and many rural, and often remote, small communities.[23,26,27] The NOSMU MD program was established with a social accountability to serve the healthcare needs of people in the region, including those living in rural communities.[26] One educational strategy used to deliver on this mission is to train students in the desired future practice context.[23,26] The remote and rural community placements (RRCP) is one such curricular element which occurs during year 2 of the Doctor of Medicine degree program during which the students live and learn in their host community. The placements normally each last four consecutive weeks during the fall and winter semesters, but due to the COVID-19 pandemic many placements lasted two weeks supplemented by a further two weeks occurring during the summer semester. During the placement students spend at least 20 hours per week with a rural generalist preceptor in a clinic, and a further three hours in other community healthcare-settings with other health professionals.[28] In addition, students continue their participation in the integrated second year curriculum of medical, clinical, and social science learning using various remote learning methodologies.[28]

In this investigation, we have tapped into the lived experience of students to investigate the manner of learning during the rural placements, and the resulting conceptualization of rural generalism that results, with the overall aim of improving the design and execution of these experiences to best teach about and promote the practice of rural medicine to our students.

Methods

Positionality of researchers

All researchers have an academic interest in rural medicine and, at the time of the study, lived in northern Ontario. BR, FK, and EC are faculty members of NOSM University. FK is also a practicing physician in rural northern Ontario, BR as a founding member of NOSM and former Associate Dean of the UME program. Interviews were conducted by BB and KT who were a post-doctoral fellow and research assistant respectively at the time of the study.

Participants

Thirteen students took part in this investigation. All participants had taken at least one rural placement during their second year of the Doctor of Medicine degree program in the 2018/19 (*n* = 5), 2019/20 (*n* = 4), or 2020/21 (*n* = 4) academic years. Twelve students had completed a four-week RRCP, while one had completed a two-week RRCP due to scheduling issues associated with the COVID-19 pandemic. Recruitment was accomplished by email invitation with the use of snowball sampling. All participants gave informed consent to take part in the study which was conducted as per a protocol approved by the Research Ethics Board of Lakehead University (#1466625*)*.

Data collection

Participants took part in either a focus group or interview depending on scheduling and availability conducted by BB and KT who were not previously known to any of the participants. A semi-structured interview process was used guided by pre-prepared questions and prompts.[29] These were developed by the researcher based on their knowledge gained from the literature, and their own experience of the RRCPs as teachers, administrators, or researchers. The questions were designed to gain information about how the students experienced the RRCPs. This included using a sociocultural lens which asked about the quality and affective nature of their relationship with their physician preceptors, the affective nature and how and what they learned from them and a place-based perspective regarding what they had learned about the placement community and how that had impacted their knowledge and attitudes towards rural generalism. All focus groups and individual interviews were conducted via the Webex (Cisco, San Jose, California) video conference system. Consent was sought from all participants to video record the interview within Webex. In total eight interviews or focus groups were performed; the length of the interviews and focus groups ranged from 30 to 90 minutes. The researchers could perceive no difference between the information collected in interviews and focus groups. Data collection continued until, in the opinion of the interviewer and research team, no new information was being received i.e. data saturation had been achieved.

The Webex system generated an automatic transcript from the recordings. Both the recordings and transcripts were uploaded to the secure file sharing program Sync.com (Toronto, Ontario) by the interviewer, and transcripts were checked for accuracy by another team member. This team member also removed any identifying information about participants, preceptors and the communities prior to the transcripts being sent to the other members of the research team via Sync.com.

Data analysis

The initial coding took place following thematic analysis,[30] informed by sociocultural and place-based learning theories.[20,25] After initial codes and preliminary themes were generated by one member of the team, transcripts were reviewed by other members of the research team to generate ideas. This was done as a self-reflexive process encouraged by using the 'critical friends' approach of each researcher challenging and offering critical feedback to other team members as a means to hear and consider other perspectives, and to reflect on their own reasoning and biases, a process which is intended to add trustworthiness to the themes.[31,32] Following this review, the draft thematic analysis was written by one member of the research team and reviewed by all members of the team together which included discussion of whether themes should be added, subtracted or aggregated. Quotes that were selected to represent themes were edited slightly for readability (grammar) without altering the meaning of the statements.

Results

We selected several themes from the analysis of data obtained by interviewing students who had participated in the RRCPs, namely the importance of the student-preceptor relationship to the learning process, the role of

preceptor-led teaching, and understanding the nature of rural generalism.

Theme 1. The importance of the student-preceptor relationship to the learning process.

Students were generally enthusiastic and positive about the RRCPs. Many statements made during the focus groups concerned the importance of the relationship between students and their preceptor, both positive and negative. For example, one student stated: "*I think the preceptors were honestly what made the placement for me, they were just such great teachers*" (S4).

Others allude to a less positive relationship stating, for example:

> *You would have only a very small amount of preceptors available to you. So, if you didn't like jive with that student, or you didn't jive with that preceptor, there wasn't much to do except remain flexible and just go with it" (S2). While another said, "I had [a few] preceptors, one being, to be honest, very hard to work with, um, my preceptor was very blunt (S5).*

Theme 2. The role of preceptor-led teaching

Preceptors were viewed as experts to be relied upon who had a *"wealth of knowledge"* (S7). In addition, preceptors supported learning in different ways, particularly by giving learners the freedom to work with patients and do as much as they were comfortable with, while remaining nearby and creating a setting that felt safe for the patients. For example, one student stated:

> *They really let us be as autonomous as we could be, but in a safe way, like, (laughs) they were able to know it was something that we could or couldn't do of course. And they were always there if there was something that we were like, 'Okay, that's- you know, this patient has a little bit more acute than I can probably handle.' (S10)*

Students also placed a high level of value on the feedback they received during this placement, particularly when they had attentive preceptors who would offer constructive criticism. For example, one stated,

> *And [the preceptors] were very great with giving feedback after every encounter and it was very constructive, like always positive, but also constructive at the same time" (S4) while another said, "I personally [liked having daily feedback], especially when you get changed to different preceptors every day, it's nice to hear the different perspectives. (S1)*

As well, preceptors who could take the time to give concrete help on "the basics", such as writing structured clinical notes, were seen as highly valuable, even if the activity wouldn't be considered fun,

> *My preceptors also really emphasized nailing down the fundamentals so they would also go over all of my [clinical] notes, every single day, and sometimes you were sitting there, like, oh, my goodness, because they were incredibly detail oriented down to the formatting and the numbering of the problem list, um, but to this day, my problem lists have always been something that people have said are strong. (S8)*

Theme 3: Understanding the nature of rural generalism

Students commonly expressed their conceptualization of rural generalism. This included the wide scope of practice. For example,

> *My understanding of rural practice was that it was just very diverse, the idea of like, full scope family practice and that was very true in [Community], the family doctors in the same day would be running their family clinic, working emerg, doing rounds on their inpatients. (S3)*

Participants also commented on their high regard for rural physicians including the high skill level required and the clinical courage of rural physicians including:

> *And just like, how brave they are at the things that they'll attempt, um, something that might have not even tried, ever, and they'll attempt it because they know the patient is better off than if they have to, um, leave town. (S2)*

Students also recognized that this also meant that, if they were to become a rural doctor themselves, they must understand what it would take to do that and be willing to take on that level of clinical responsibility themselves,

> *It kind of sparked, um, conversations kind of, in my- for myself, over the following two years in medical school, like, how can I prepare for this? And is this something I want to do? … would I be able to fulfill the roles that those preceptors were doing? (S2)*

Another aspect of rural generalism expressed by participants was the tension between the respect being a rural physician would command, and the level of pressure and responsibility this would engender on a person,

particularly in a small community. As such, learners discussed that rural doctors were seen as pillars of their communities,

> *The physicians in my community sit on councils for the town, they run the ski club, (laughs) they, you know, they, they do a whole lot more, um, and I think part of that is also just when you're in a small town, like that, having the privilege of a higher education, of a stable job, and kind of knowing that you're always needed in the community lends to a level of stability. (S8)*

At the same time, learners identified that the amount of pressure would be high to place on one individual, and in some cases this itself could be scary:

> *Like, these physicians are incredibly competent, their community really relies on them, and I think that freaked me out a little bit is how reliant the comm(unity)- like, if [the physician] left or decided to have a life change … this community would be absolutely devastated. (S12)*

Some preceptors were seen to have a better sense of wellness or work-life balance than others, as well, not all would respond the same way when discussing boundary settings, therefore, different learners would take away different attitudes depending on who they had as a preceptor, for example,

> *One of the physicians told me, like, um, it's the best thing to do is just kind of go with it and answer [community member's] questions. And then it's gonna- just expecting that when you go in that your, like, 20 minute grocery shop is probably going to be an hour.*

Students also discussed the idea of work-life balance and the type of balance they might look forward to if they were to become rural physicians themselves. They often drew on their preceptor's expertise when it came to setting boundaries with patients in a small town,

> *I think was good to kind of see, and even be able to kind of talk with them, and get their perspectives on how you manage, um, sometimes those, those expectations [of community members]. (S7)*

Discussion

In this study we have investigated how students learn about rural medicine during a 2-4 weeklong community placement in a small remote and rural community. Our major finding was that students placed great importance on their relationship with the physician preceptors who supervised them during their in-clinic experiences. Students talked about this aspect of the placement more than any other when compared to accounts of their interactions with patients, peers, or other members of the community. Our data indicated that the student's satisfaction with the experience relied much on the quality of relationship with their preceptor. Given that quality teacher-student relationships can influence future career choice,[33] close attention should be given to making this relationship as effective as possible. Our data suggest that the nature and quality of the relationship between the student and preceptor are related to the preceptor's ability as a clinical teacher, including (a) being approachable and attentive, (b) being able to effectively communicate medical expertise, (c) giving regular and informative feedback, and (d) being able to gauge the student's current ability and confidence level in a manner which balances encouraging students to be more autonomous without harming their sense of safety. Such factors are broadly similar to the characteristics of effective precepting across a range of clinical disciplines which indicate that excellent preparation, knowledge, approachability, being skilled facilitator of learning, and being a skilled communicator are most valued by students.[34-37]

Our study also shows that the RRCP can be an effective way to learn about rural medicine, particularly since it mirrors the knowledge that rural physicians state they want medical students to acquire.[28] This includes (a) the high degree of skill needed to be a rural physician, (b) that rural medicine involves a large scope of practice requiring many different skill sets, (c) the challenges of having an often-high workload and the impact on work-life balance, and (d) the professional boundary issues inherent in rural practice including the overlapping and often complex relationships between physician and community members.[28,38] The need to be a generalist in rural contexts is a common finding of studies in diverse geographical locations, and the boundary issues are a common, perhaps universal, feature of rural practice in diverse geographies.[39-41] Interestingly, our study did not find evidence that students considered issues of professional isolation, something that been reported in other contexts by post-graduate training and independent practice stage physicians.[32] This may be due to the short length of the RRCP not allowing students to discern this attribute, something which may more likely to occur in longer duration Longitudinal Integrated Clerkship experiences.[23,27.]Participants also did not mention the overall lack of physicians in rural communities that was, in

part, the stimulus for this study,[3,5-7] however the lack of preceptor availability mentioned by some participants (see Theme 1) suggest this may have been taken for granted by some students.

Our data suggests the primary means by which students gained knowledge of rural medicine was by interacting with the physician preceptor, similar to what occurs during the clerkship rotations participated in by more senior learners.[43] It is apparent that preceptors act not only as a role models, but also as the major source of knowledge about rural medicine as compared to other healthcare professionals, members of the wider community, or the academic sources, for example books and research reports, which students are asked to read during the placement and have been, up until this point, their primary source of information about the subject. With respect to the latter students in the NOSM U program have been exposed to curriculum designed to teach about the geographic determinants of health, and how geography impacts medical practice in classroom-based learning throughout the pre-clerkship phase of the program. As such students have much foundational 'scaffolding' about rural medicine prior to RRCP which may have allowed them to engage in learning about such from their preceptor.

From a theoretical standpoint, acquiring knowledge by means of the preceptor-student relationship is best described by sociocultural learning theory which views all learning as a socially contextualized activity.[25] In sociocultural learning the relationship between students and preceptors is pivotal as students first learn alongside their teacher before progressing to incorporate the acquired knowledge and skills into their own independent repository of expertise.[44] The need for effective interaction between students and teachers predicted by the sociocultural model indicates that the quality of the relationship influences not only whether students view the placement positively, but also the extent to which the educational aim of learning about rural generalism is achieved. With limited preceptor availability in some rural communities, such an approach to curriculum delivery does possess a measure of risk that the relationship, and hence the learning, may be poor. It remains unclear, however, as to how the quality of teaching and learning in the rural placements extends beyond the experience itself to impact the student's intent to practice in a rural community, a question that sits on the boundary between education as a means to inform, and marketing as a way to recruit.

We have previously described early-clinical experiences in rural communities in terms of place-based educational theory which considers rural places in terms of various dimensions of place including political, cultural, perceptual and environmental aspects.[28] Viewing the placement in this way can guide curricular design when considering what students are expected to learn about rural places and especially their impact on medical practice.[9] Students, however, spoke mainly about rural medicine in general, rather than the practice of medicine in a particular rural place. This may suggest a lesser importance of any place-based theoretical understanding which emphasizes the importance of the perceptual experience of particular places. [20-22] However, one can consider the preceptor to be part of the human-related components of place (usually termed the social and cultural dimension in place-theory) and hence a key link by which students understand the community and how physicians live and work within it.[21] In other words, by using a place-theory lens the preceptor may be viewed not just as a teacher of rural medicine, but also as the embodiment and representative of the placement community, As such, preceptors may not only influence the intent of the student to practice rurally, but also whether they will return to work in that community specifically. To our knowledge, such a possibility has not been investigated given that research about the preceptor-student relationship in medical school and its effect of future practice is confined to how this influences the student's choice of medical role e.g. primary vs. specialist practice, or the type of location e.g. rural vs. urban, but not on whether they practice in the same rural community as they were placed within during medical school.[33,45] This may be of great importance to the sustainability of the RRCPs and similar experiences as recruiting future colleagues for their own community is an important aim of some, but not all, preceptors.[28] Within the NOSM U program preceptors are prepared mainly via curriculum documents or 'handbooks' which describe the learning objectives, and expected teaching activities that are to occur within the RRCP. We suggest that a better understanding of the interplay between the preceptor's role as a clinical teacher and as a community liaison, and how sociocultural and place-based understanding of rural placements intersect, may help with the design of rural placements and the training of the physicians who work within them.

Limitations

Our study is limited by only considering the opinion of students and not including the preceptor's perception of the placement's teaching about rural generalism, or their place within it. The study also included only early-stage rural placements at a single medical school, and hence we cannot draw conclusions about the applicability of our findings to other contexts.

Conclusion

We found that rural placements offer an effective means for students to learn about rural generalism. Our data also support that sociocultural learning, embedded in the student-preceptor relationship, represents the most acknowledged mechanism by which learning occurs. Educational programs are suggested to pay particular attention to the support of rural preceptors to maximize learning about rural generalism, and the intended learning outcome of supporting an emerging professional identity for rural practice. This includes improving student satisfaction with these placement experiences, including preceptor training and preparation, having a curriculum that facilitates the student-preceptor relationship, and providing sufficient organizational support for faculty and learners. Furthermore, future research should usefully investigate how rural placements enhance recruitment to not just rural medicine in general, but to specific rural communities in particular.

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