The Rural Care Needs Index: a potential tool for "have-not" communities

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Since the early 1990s, researchers have attempted to define and measure "rurality" in the context of rural and remote medical care. At a general level, Wootton raised the question of the fit, or lack thereof, between the training of physicians and the dynamics of rural practice.[1] Larsen Soles described the challenge posed by the rural "continuum" (that diversity of places between what we understand to be remote and what we understand to be urban) and how it influences the availability of tools and supports, as well as how one practises.[2] Training and practice were key to Helm's observations about the intimacy of rural practice;[3] Montgomery's review of the personal, community and professional factors that support successful rural practice;[4] and MacLellan's description of how rural Canada "needs the generalist with defined competencies, constantly fluctuating between primary, secondary and tertiary levels of care."[5]

Attempts at measuring rurality from a health care or delivery perspective are similarly important and complex. Pong and Pitblado highlighted how descriptions of over- or underserviced rural areas are challenged by the lack of an objective "optimal ratio" of physicians to patients in different settings.[6] Aird and Kerr critiqued the Rurality Index for Ontario by raising a number of factors not addressed in that ranking system, such as the ability to provide general surgery, obtain locums and access needed equipment.[7]

A benchmark in measuring rurality across British Columbia is the work done by Leduc, who argued for the need "to provide a standard of comparison that can be used by researchers, educators, administrators and rural physicians."[8] Leduc's General Practice Rurality Index comprises a host of variables, including health facilities, staff and equipment; number of general practitioners and specialists; remoteness; availability of transportation; presence and level of training of a range of paramedical support services and staff; community social and economic characteristics; and population levels and characteristics.[8] Olatunde and colleagues' Simplified General Practice Rurality Index focuses on just 3 factors: remoteness from an advanced referral centre, remoteness from a basic referral centre and drawing population.[9]

These authors' work was supported by research at Montana State University that had already concluded how just 2 variables, population and distance to the nearest emergency care facility, were adequate for developing a rurality index.[10] The simplicity of the Montana State University Rurality Index meant that its results were easy to comprehend and readily explained to local residents and decision-makers alike.

EXPECTATION OR NEED FOR RURAL SERVICES

In reviewing the literature, we realized that for all of the complexity found within individual places, these studies had one feature in common: a smaller population conferred a higher degree of rurality. The circumstances we faced in our remote community of Tumbler Ridge, BC, required something different. Our goal was not to measure rurality, but rather to describe a measure that links

the scale of local demand with what services one could expect a community to support — in other words, its need for services. The greater the distance of the rural or remote community from the referral centre and the greater its population, the greater would be such expectation, or need. Thus, population, although inversely proportional to rurality, is directly proportional to the need for rural care in a community of a given remoteness. Our focus on the "demand" aspect of health care needs mirrors earlier articles in *CJRM* on the "supply" aspect of rural practice.[3–6,9]

WHY WERE WE DOING THIS?

Tumbler Ridge, created in 1981, was purpose-built to serve the massive Northeast Coal Project. For its first 2 decades, it was virtually a one-industry town. In 2000, the collapse of the coal industry threatened the community with extinction. Its subsequent survival, reinvention and economic diversification is a success story.

However, this was achieved through what were probably the most intense demographic changes to affect any community in BC in the past decade. Not only were there large fluctuations in population, but owing to a massive housing sale, the influx of retirees and the aging workforce, the proportions of seniors and residents aged 50–65 years rose dramatically. Yet, like many other northern communities, Tumbler Ridge had been designed and built for young families.

Residents and professionals who stayed through these changes noted that the decline in population had led to health service cuts. Despite arguments made by the community, no steps were taken by the regional health authority to address the increases in population and demographic aging. The overall effect was the erosion of services over time.

The Tumbler Ridge Mayor's Task Force on Seniors' Needs recognized that objective evidence was required if the case for enhanced services was to be made. However, the evidence to support the concerns was not readily available. The Community Development Institute at the University of Northern British Columbia was engaged to provide the necessary data and was requested to undertake a comparative study that compared services available in Tumbler Ridge with those in similar communities.[11]

The conclusions and recommendations of this study were to be targeted at local residents, elected officials and administrative staff, and the regional health authority. A simple measure that was easy to comprehend and readily explained was required.

THE RURAL CARE NEEDS INDEX

Consequently, we developed the Rural Care Needs Index (RCNI), which employs just 2 determinants: distance from basic referral centre (km/100) and population size (no./1000).

A community that is 120 km from the nearest referral centre, with a population of 3100, would thus yield an RCNI of 3.72 (1.2×3.1). This index implies that a small, remote community will have a similar RCNI to a community that is larger but proportionately closer to a basic referral centre. Once data were collected for rural communities in northern BC, it became a straightforward process to compare services offered in these communities with reference to their respective RCNIs and to cluster communities with similar RCNIs for comparative purposes.

We recognized that multiple levels may exist at which a rural community could be disadvantaged in Canada. Our comparative study simply attempted to compare "like with like" within the area served by the Northern Health Authority (roughly, the northern two-thirds of the province's land base).

COMPILING THE DATA

The first element in amassing the data involved calculating distance to referral centre and population size to enable the calculation of the RCNI. The second element involved focusing on a comparison of selected care attributes. Combined with the RCNI, this enabled the identification of communities that were underserviced. We selected the following straightforward measurables, believing they were broad in scope and easy to access and comprehend:

- number of physicians
- number of emergency department nurses
- availability of public health nursing
- availability of dentistry
- ability to manage maternity care locally
- level of palliative care provision
- level of emergency care provision
- availability of assisted living services
- availability of local home care services
- level of local ambulance service
- type of medevac transportation service available
- ability of local health facilities to accommodate overnight stays
- availability of social worker services
- availability of counselling services

The entire list of communities was sorted for RCNI, then we examined the cluster of communities with an RCNI immediately above and below

that of Tumbler Ridge. The results portrayed what we had feared: our community appeared to be significantly disadvantaged compared with others of similar population and remoteness. We realized that the RCNI could potentially be used as a tool for other similarly disadvantaged communities.

THE OFFICIAL RESPONSE

The results, conclusions and recommendations were published[11] and presented to the regional health authority. During the study, we had attempted to establish meaningful contact with this authority for data-gathering purposes but had been unsuccessful. The study had, therefore, become more challenging, time-consuming and expensive. After submission of the report, the community waited 20 months for the official response, by which time the data in our comparative study could be criticized for no longer being current.

The official response simply acknowledged receipt of the study and listed services provided to the community. It made no mention of the RCNI, the "like with like" comparison or any comparative data, although these concepts formed the essential theme of the information we had presented.

In this sense, our effort could be construed as a failure. However, we succeeded in obtaining verifiable data that showed significant inequalities in services, and we demonstrated one way by which communities can react to diminishing health services (although our evidence-based approach did not guarantee a positive outcome). Our experience provides a model, through the Tumbler Ridge Mayor's Task Force on Seniors' Needs, of the successful cooperation of elected officials, professionals and community volunteers.

THE RCNI'S POTENTIAL

Rurality is an important concept in rural health care, but it is distinct from the equally relevant concept of rural need. The RCNI has the potential to address this concept. The index addresses equality and fairness, ideas which we think resonate with Canadians. There may be examples of communities with similar RCNIs that merit different levels of service because of specific demographics or unique local factors. However, an acceptance of the RCNI as a measuring tool would mean that such considerations would need to be justified. We suggest that the default position be that communities with similar RCNIs are entitled to similar services and facilities. The required changes may take time, but having such concepts accepted in principle would provide a promising beginning.

We propose 3 caveats to the use of the index:

- We promote the RCNI as a potential tool for "have-not" communities. However, for "have" communities, maintenance of the status quo may be a desirable goal.
- There is more than one type of equality, and, rather than raise the services in communities like Tumbler Ridge to the required RCNI level, a potentially negative outcome or "solution" may be to reduce services in the privileged communities.
- Accepting the concept of the RCNI and thus exposing inequalities in health care delivery will be an unpleasant task for health authorities and may be resisted unless pressure is exerted by groups such as the Society of Rural Physicians of Canada.

CONCLUSION

We believe that the simple formula of the RCNI makes it easily exportable to rural and remote communities across Canada. In order for it to be a relevant, useful tool for disadvantaged communities, we suggest it receive further attention. Leduc's assertion on the need for "a standard of comparison that can be used by researchers, educators, administrators and rural physicians"[8] seems as applicable to rural care needs as to rurality.

Competing interests: None declared.

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