Research Note / Note de recherche

Understanding Aging, Frailty, and Resilience in Ontario First Nations*

Morgan Slater,[1] Kristen Jacklin,[2] Roseanne Sutherland,[3] Carmen Jones,[3] Melissa Blind,[2] Wayne Warry,[2] Meghan Valvasori,[4] and Jennifer Walker[4,5]

RÉSUMÉ

Compte tenu des estimations sur la fragilité au Canada, des chercheurs universitaires et des chefs autochtones de l'Ontario se sont réunis pour constituer un premier profil du vieillissement chez les Premières Nations en Ontario. En utilisant les données autodéclarées d'adultes des Premières Nations qui ont participé à la Phase 2 de l'Enquête régionale sur la santé des Premières Nations de l'Ontario, nous avons constaté que les membres des Premières Nations de l'Ontario présentaient des taux de fragilité plus élevés que la population canadienne en général, et que la fragilité précoce semblait affecter les communautés des Premières Nations. Il est important de prendre en compte ces données alors que les communautés planifient les besoins en soins de santé de leur population vieillissante. Ceci est particulièrement pertinent dans le contexte de la COVID-19, dont la gravité est exacerbée par des problèmes de santé sous-jacents.

ABSTRACT

Following Canadian estimates of frailty, academic researchers and the Chiefs of Ontario came together to create the first Ontario-wide profile of aging in First Nations people in Ontario. Using self-reported data from First Nations adults who participated in the Ontario First Nations Regional Health Survey Phase 2, we found that First Nations people in Ontario experience higher rates of frailty than the general Canadian population and early onset frailty appears to affect First Nations communities. This is important to consider as communities plan for health care needs of an aging population and is particularly relevant in the face of Covid-19, as we know severity is exacerbated by underlying health conditions.

[1] Department of Family Medicine, Queen's University, Kingston, Ontario

[2] Memory Keepers Medical Discovery Team, Department of Family Medicine and Biobehavioral Health, University of Minnesota Medical School, Duluth

[3] Chiefs of Ontario, Toronto

[4] School of Rural and Northern Health, Laurentian University, Sudbury, Ontario

[5] ICES, Toronto, Ontario

* The authors would like to acknowledge the important contributions of our Knowledge Circle: Annie O'Brien and Derek Debassige, and the Language Group and Community Advisory Council on Manitoulin Island. We would also like to acknowledge the contributions of Melissa Andrew, Susan Bronskill, Janet Smylie, David Henry, Donna Loft, Karen Pitawanakwat, and Graham Mecredy.

Funding: This study was support by a grant from the Canadian Institutes of Health Research. Additional support was provided by Jennifer Walker through a Tier 2 Canada Research Chair in Indigenous Health.

Competing interests: The authors have no competing interests to declare.

Manuscript received: / manuscrit reçu : 24/04/2020

Manuscript accepted: / manuscrit accepté : 28/04/2020

Mots-clés: vieillissement, fragilité, Premières Nations

Keywords: aging, frailty, First Nations

La correspondance et les demandes de tirés-à-part doivent être adressées à : / Correspondence and requests for offprints should be sent to:
Jennifer D. Walker, Ph.D.
School of Rural and Northern Health
Laurentian University
935 Ramsey Lake Road
Sudbury, ON P3E 2C6
(jenniferwalker@laurentian.ca)

Introduction

First Nations populations are aging. In fact, the proportion of older people in First Nations populations is growing more quickly than in the general Canadian population (Malenfant & Morency, 2011). First Nations people's perceptions on aging are nuanced by lifelong impacts of colonization yet layered with positive cultural perspectives on movement and growth through the life course. Compared to other populations in Canada, First Nations populations have higher rates of most age-related chronic conditions (First Nations Information Governance Centre, 2012, 2018b; Green et al., 2019; Malenfant & Morency, 2011; Reading, 2009; Riediger, Lix, Lukianchuk, & Bruce, 2014) and many conditions – such as diabetes, renal disease, and dementia – have onset at younger ages (Jacklin, Walker, & Shawande, 2012). Older First Nations adults are more likely to report multiple co-morbid conditions (First Nations Information Governance Centre, 2012, 2018b; Wilson, Rosenberg, & Abonyi, 2011), have experience with intergenerational trauma, and yet hold positive perceptions of aging and wellness. As such, they present with a complex set of health care needs while experiencing many physical and cultural barriers in accessing formal health care systems (First Nations Information Governance Centre, 2012, 2018b). In the current global crisis of Covid-19, understanding the health status of First Nations populations is particularly important, as the severity of Covid-19 is influenced by underlying chronic conditions (Abbatecola & Antonelli Incalzi, 2020; Centers for Disease Control and Prevention, 2020).

The historical and ongoing impacts of colonization have contributed to poverty and marginalization which have resulted in significant disparities in health status and outcomes and which have been reported for decades (Feir & Akee, 2019; Gracey & King, 2009; King, Smith, & Gracey, 2009; MacDonald & Steenbeek, 2015; Reading, 2009). Despite these persistent health inequities, First Nations people are resilient and working toward healing (Kirmayer, Dandeneau, Marshall, Phillips, & Williamson, 2011). To understand the health of their communities and advocate for services within a complex and fragmented health care system (Cummins, Curtis, Diez-Roux, & Macintyre, 2007; Fitzpatrick, Perkins, Luland, Brown, & Corvan, 2017), First Nations leaders need access to population-level data. However, access to reliable data on health status has been a continual challenge for these communities, impeding efforts to advocate and plan for the health care service needs for an aging population (Minore, Katt, & Hill, 2009).

Recently, aging research has focused on frail, older adults with complex health needs (Bunn et al., 2014). Frailty is characterized by a reduction in physiological reserve, a limited ability to resist environmental stressors, and an increased risk of functional decline (Bergman et al., 2007; Strandberg & Pitkala, 2007). The occurrence of frailty is associated with increasing age among Canadian seniors (Hoover, Rotermann, Sanmartin, & Bernier, 2013; Jones, Song, Mitnitski, & Rockwood, 2005; Rockwood, Song, & Mitnitski, 2011; Song, Mitnitski, & Rockwood, 2010). In 2017, national data showed that early onset frailty was affecting First Nations communities, with frailty levels among First Nations adults aged 45–54 years old similar to those for other Canadians aged 65–74 (First Nations Information Governance Centre & Walker, 2017). This work sparked local interest among academic researchers and First Nations organizations in Ontario to better understand aging, frailty, and resiliency among First Nations adults. Together with academic researchers, the Chiefs of Ontario launched the Ontario First Nations Aging Study. The goal of this collaborative work was to create the first Ontario-wide profile of aging in First Nations populations using a mixed-methods approach, drawing on self-reported data collected in First Nations communities through the First Nations Regional Health Survey, health services data for all First Nations people living in Ontario, and conversations about aging well with Anishinaabemowin language speakers and older Anishinaabeg on Manitoulin Island (Walker et al., 2019).

Participatory Approach

Our objectives for this project were guided by two key theoretical frameworks that describe First Nations conceptions of health and well-being. The first is the First Nations Regional Health Survey Cultural Framework, which conceptualizes health from First Nations

https://doi.org/10.1017/S0714980820000276 Published online by Cambridge University Press

perspectives as the "total health of the total person in the total environment" (First Nations Information Governance Centre, 2005). This framework ensures that the results of this work are interpreted and framed in a way that is meaningful and relevant to First Nations concepts of health and personhood. In addition, the Integrated Life Course and Social Determinants Model of Aboriginal Health (Loppie Reading & Wein, 2009) ensures that the evaluations of frailty and wellness are contextualized as an accumulation of risk, exposures, and outcomes across the life course that include factors such as colonization and contemporary political realities. Together, these frameworks emphasize health as a holistic concept informed by historical, cultural, social, emotional, physical, and spiritual influences over a person's life course.

A First Nations–led approach based on principles of Indigenous data sovereignty (Walker, Lovett, Kukutai, Jones, & Henry, 2017) guided this work. The lead academic investigators have well-established and long-standing collaborative relationships with First Nations communities and the Chiefs of Ontario (Walker, Rowe, & Jones, 2018), whereby community partners are involved in all stages of the project and have actively participated as co-investigators in the conception, design, analysis, and interpretation of the results. To ensure that First Nations perspectives were embedded throughout the entire research process, we engaged a knowledge circle, which included First Nations community members and traditional Knowledge Keepers, throughout the project. Annual gatherings of the extended research team were held to ensure that the results of this work were grounded in and respected First Nations knowledge and processes. This project was reviewed and approved by the Research Ethics Boards of Laurentian University, Sunnybrook Health Sciences Centre, and the Chiefs of Ontario's Health Coordination Unit.

The Relationship between Frailty, Age, and Sex

We used data from the Ontario Region Phase 2 of the First Nations Regional Health Survey, which is a First Nations–governed cross-sectional survey and the only source of health-related data for First Nations people living in First Nations communities, to describe frailty among Ontario's First Nations adults. The Ontario Regional Health Survey (RHS) Phase 2 was conducted between August 2008 and November 2010 and involved 24 First Nations communities across Ontario. The sample was designed to represent all First Nations people living in First Nations communities in Ontario. Briefly, the two-stage sampling strategy involved (a) stratified selection of communities to participate in the survey and (b) selection of individuals within the communities sampled (First Nations Information Governance Centre, 2012). The weighted sample of the RHS Phase 2 represents a total of 79,903 First Nations people in Ontario.

We followed the methodology used by a previous study of frailty in First Nations seniors (First Nations Information Governance Centre & Walker, 2017) and applied a modified frailty index originally developed for use in the Canadian Community Health Survey and validated in the general Canadian population aged 65 years and older (Hoover et al., 2013). The index essentially counts the number of health conditions experienced by an individual, divided by the total number of conditions included in the index, to create a "frailty score". The score ranges between 0 and 1 with higher scores indicating greater levels of frailty. The RHS-based frailty index contained 26 of the original 30 deficits (First Nations Information Governance Centre & Walker, 2017). Based on the cut-offs defined for the general Canadian population, we classified First Nations people as being frail versus those who were not frail or considered pre-frail (Hoover et al., 2013).

Similar to national data (First Nations Information Governance Centre & Walker, 2017), First Nations people living in First Nations communities in Ontario experienced higher rates of frailty than the general Canadian population (Figure 1); for example, while only 16.0 per cent of Canadians aged 65–74 were frail, 50.1 per cent of First Nations people in Ontario in the same age group were frail. Frailty appears to affect young First Nations adults in Ontario, with 14.8 per cent of 35–44-year-olds and 26.1 per cent of 45–54-year-olds considered frail. We saw a higher proportion of frailty among women (26.0%) compared to men (21.3%); however, we saw no gender differences when stratified by age group.

Discussion

Following national estimates of frailty among First Nations people in Canada, we collaborated closely with partners at the Chiefs of Ontario to create the first Ontario-wide profile of aging in First Nations populations. A vital component of any effort to improve health services for older First Nations people and to plan for the future is the ability to monitor health and health services use at a population level. There must be high-quality, relevant, and accessible data – and these data must be used in ways that reflect Indigenous conceptions of health and well-being, respect First Nations governance of data, and promote culturally safe health and supportive care. Data need to be as local as possible to allow for action.

We found that frailty levels among First Nations adults are higher than the overall Canadian population (Hoover et al., 2013). Similar to other chronic diseases (Jacklin et al., 2012), early onset frailty appears to affect

https://doi.org/10.1017/S0714980820000276 Published online by Cambridge University Press

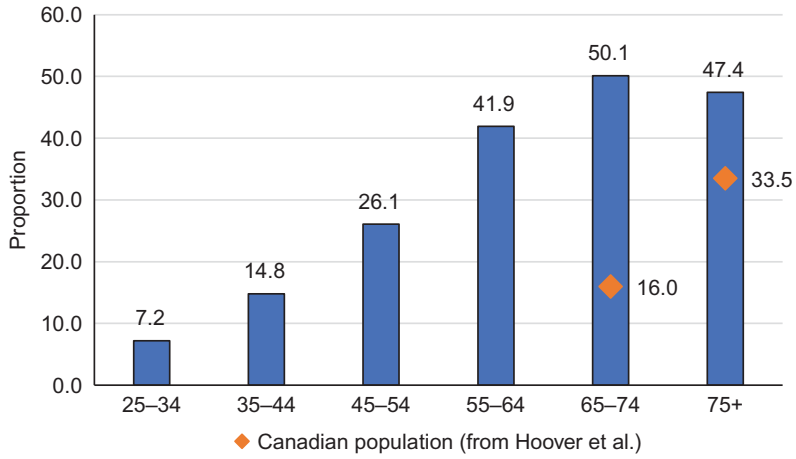

Figure 1: Frailty across age groups in First Nations people in Ontario living in First Nations communities

First Nations communities. Our findings are in line with those reported in national data (First Nations Information Governance Centre & Walker, 2017) as well as those reported in older Aboriginal populations in remote Australia (Hyde et al., 2016). The prevalence of frailty was higher among First Nations women than in men, a trend that is reported in other studies for both Indigenous (First Nations Information Governance Centre & Walker, 2017; Hyde et al., 2016) and non-Indigenous populations (Gordon et al., 2017; Hoover et al., 2013).

Although it is important to acknowledge, describe, and explore this high level of morbidity and frailty among older First Nations people, it is equally important to recognize the strength and resiliency of this population. In 2015–16, 87.9 per cent of First Nations seniors living on reserve spoke a First Nations language (First Nations Information Governance Centre, 2018b). This alone shows remarkable strength in the face of centuries of assimilative policies, including residential schools. Over 40 per cent (42.3%) of people aged 60 years and older living in First Nations communities had attended residential schools (First Nations Information Governance Centre, 2018a) where their cultures and languages were prohibited. The impact of such policies was widespread and intergenerational throughout all First Nations people, communities, and cultures in Canada. First Nations communities hold remarkable potential for addressing the persistent health and social challenges that they face as a result of ongoing colonial practices. As we develop culturally congruent approaches to education, prevention, management, treatment, and service delivery, the trajectory of population health may respond favourably. To facilitate this, ongoing monitoring and assessment of health outcomes is important. Accordingly, measurement of frailty over time will help First Nations to guide both efforts and resource utilization.

To date, there have been few investigations into frailty and vitality in older First Nations populations. First Nations people living in First Nations communities are experiencing higher levels of frailty at earlier ages (First Nations Information Governance Centre & Walker, 2017). This is particularly relevant in the face of the global Covid-19 pandemic as First Nations populations are particularly vulnerable to both increased transmission and severe outcomes of Covid-19 as the severity of illness is influenced by an individual's underlying chronic conditions (Abbatecola & Antonelli Incalzi, 2020; Centers for Disease Control and Prevention, 2020), many of which have earlier ages of onset in First Nations populations (First Nations and Diabetes in Ontario, 2019; Jacklin et al., 2012). Data show that risk of death associated with the 2009 H1N1 pandemic was up to six times higher in Indigenous than in non-Indigenous populations (La Ruche et al., 2009).

Although frailty and multimorbidity are important concepts in understanding the experience of older First Nations people, First Nations understandings of health, aging, and wellness transcend these more narrow and medicalized concepts. As such, First Nations collaborators prefer to focus on aging well and with vitality. Clearly, "vitality" does not simply mean "not frailty". However, the defining elements of "aging with vitality" in First Nations populations have not yet been delineated. Collaborative First Nations–driven research is required to explore the multiple facets of aging well in First Nations communities. How do First Nations people experience aging and navigate complex health systems with complex medical conditions within complex social and historical conditions? What does "frailty" mean in First Nations communities when a high proportion of people at younger ages are classified as frail? Future work must explore the relationship between frailty, multimorbidity, and vitality in First Nations populations.

https://doi.org/10.1017/S0714980820000276 Published online by Cambridge University Press

References

Abbatecola, A. M., & Antonelli Incalzi, R. (2020). COVID-19 spiraling of frailty in older Italian patients. *Journal of Nutrition and Healthy Aging*, *24*, 1–3.

Bergman, H., Ferrucci, L., Guralnik, J., Hogan, D. B., Hummel, S., Karunananthan, S., & Wolfson, C. (2007). Frailty: An emerging research and clinical paradigm—Issues and controversies. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, *62*(7), 731–737. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/17634320.

Bunn, F., Burn, A. M., Goodman, C., Rait, G., Norton, S., Robinson, L., … Brayne, C. (2014). Comorbidity and dementia: A scoping review of the literature. *BMC Medicine*, *12*, Art. 192. https://doi.org/10.1186/s12916-014-0192-4.

Centers for Disease Control and Prevention. (2020). *People with certain medical conditions.* Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/groups-at-higher-risk.html.

Cummins, S., Curtis, S., Diez-Roux, A. V., & Macintyre, S. (2007). Understanding and representing 'place' in health research: A relational approach. *Social Science & Medicine*, *65*(9), 1825–1838. https://doi.org/10.1016/j.socscimed.2007.05.036.

Feir, D., & Akee, R. (2019). First peoples lost: Determining the state of status First Nations mortality in Canada using administrative data. *Canadian Journal of Economics-Revue Canadienne D Economique*, *52*(2), 490–525. https://doi.org/10.1111/caje.12387.

Green, M. E., Jones, C. R., Walker, J. D., Shah, B. R., Jacklin, K., Slater, M., & Frymire, E. (2019). *First Nations and diabetes in Ontario*. Toronto, ON: ICES.

First Nations Information Governance Centre. (2005). (RHS) cultural framework. Retrieved from https://fnigc.ca/sites/default/files/ENpdf/RHS_General/developing-a-cultural-framework.pdf.

First Nations Information Governance Centre & Walker, J. D. (2017). Aging and frailty in First Nations communities. *Canadian Journal on Aging*, *39*(2), 133–144. https://doi.org/10.1017/S0714980817000319.

First Nations Information Governance Centre. (2012). *First Nations Regional Health Survey (RHS) 2008/10: National reports on adults, youth and children living in First Nations communities.* Retrieved from https://fnigc.ca/sites/default/files/First%20Nations%20Regional%20Health%20Survey%20(RHS)%202008-10%20-%20National%20Report.pdf.

First Nations Information Governance Centre. (2018a). *National report of the First Nations Regional Health Survey Phase 3* (Vol. *1*). Ottawa, ON: First Nations Information Governance Centre. Retrieved from https://fnigc.ca/sites/default/files/docs/fnigc_rhs_phase_3_national_report_vol_1_en_final_sm_1.pdf.

First Nations Information Governance Centre. (2018b). *National report of the First Nations Regional Health Survey Phase 3* (Vol. *2*). Ottawa, ON: First Nations Information Governance Centre.

Fitzpatrick, S. J., Perkins, D., Luland, T., Brown, D., & Corvan, E. (2017). The effect of context in rural mental health care: Understanding integrated services in a small town. *Health Place*, *45*, 70–76. https://doi.org/10.1016/j.healthplace.2017.03.004.

Gordon, E. H., Peel, N. M., Samanta, M., Theou, O., Howlett, S. E., & Hubbard, R. E. (2017). Sex differences in frailty: A systematic review and meta-analysis. *Experimental Gerontology*, *89*, 30–40. https://doi.org/10.1016/j.exger.2016.12.021.

Gracey, M., & King, M. (2009). Indigenous health part 1: Determinants and disease patterns. *Lancet*, *374*(9683), 65–75. https://doi.org/10.1016/S0140-6736(09)60914-4.

Hoover, M., Rotermann, M., Sanmartin, C., & Bernier, J. (2013). Validation of an index to estimate the prevalence of frailty among community-dwelling seniors. *Health Report*, *24*(9), 10–17. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/24258362.

Hyde, Z., Flicker, L., Smith, K., Atkinson, D., Fenner, S., Skeaf, L., … Lo Giudice, D. (2016). Prevalence and incidence of frailty in Aboriginal Australians, and associations with mortality and disability. *Maturitas*, *87*, 89–94. https://doi.org/10.1016/j.maturitas.2016.02.013.

Jacklin, K. M., Walker, J. D., & Shawande, M. (2012). The emergence of dementia as a health concern among First Nations populations in Alberta, Canada. *Canadian Journal of Public Health*, *104*(1), e39–44. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23618107.

Jones, D., Song, X., Mitnitski, A., & Rockwood, K. (2005). Evaluation of a frailty index based on a comprehensive geriatric assessment in a population based study of elderly Canadians. *Aging Clinical and Experimental Research*, *17*(6), 465–471. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/16485864.

King, M., Smith, A., & Gracey, M. (2009). Indigenous health part 2: The underlying causes of the health gap. *Lancet*, *374*(9683), 76–85. https://doi.org/10.1016/S0140-6736(09)60827-8.

Kirmayer, L. J., Dandeneau, S., Marshall, E., Phillips, M. K., & Williamson, K. J. (2011). Rethinking resilience from indigenous perspectives. *Canadian Journal of Psychiatry*, *56*(2), 84–91. https://doi.org/10.1177/070674371105600203.

La Ruche, G., Tarantola, A., Barboza, P., Vaillant, L., Gueguen, J., Gastellu-Etchegorry, M., & Epidemic Intelligence

Team at InVS. (2009). The 2009 pandemic H1N1 influenza and indigenous populations of the Americas and the Pacific. *Euro Surveillance*, *14*(42), pii=19366. https://doi.org10.2807/ese.14.42.19366-en.

Loppie Reading, C., & Wien, F. (2009). *Health inequalities and social determinants of Aboriginal Peoples' health*. Prince George, BC: National Collaborating Centre for Aboriginal Health. Retrieved from https://www.nccah-ccnsa.ca/docs/social%20determinates/NCCAH-Loppie-Wien_Report.pdf.

MacDonald, C., & Steenbeek, A. (2015). The impact of colonization and western assimilation on health and wellbeing of Canadian Aboriginal peope. *International Journal of Regional and Local History*, *10*(1), 32–46.

Malenfant, E. C., & Morency, J. D. (2011). *Population projections by Aboriginal identity in Canada, 2006 to 2031*. Ottawa, ON: Statistics Canada. Retrieved from https://www150.statcan.gc.ca/n1/pub/91-552-x/91-552-x2011001-eng.htm.

Minore, B., Katt, M., & Hill, M. E. (2009). Planning without facts: Ontario's Aboriginal health information challenge. *Journal of Agromedicine*, *14*(2), 90–96. https://doi.org/10.1080/10599240902739802.

Reading, J. (2009). *The crisis of chronic disease among Aboriginal peoples: A challenge for public health, population health and social policy*. Retrieved from https://dspace.library.uvic.ca/bitstream/handle/1828/5380/Chronic-Disease-2009.pdf?sequence=1&isAllowed=y.

Riediger, N. D., Lix, L. M., Lukianchuk, V., & Bruce, S. (2014). Trends in diabetes and cardiometabolic conditions in a Canadian First Nation community, 2002–2003 to 2011–2012. *Preventing Chronic Disease*, *11*, E198.

Rockwood, K., Song, X., & Mitnitski, A. (2011). Changes in relative fitness and frailty across the adult lifespan: Evidence from the Canadian National Population Health Survey. *CMAJ*, *183*(8), E487–E494. https://doi.org/10.1503/cmaj.101271.

Song, X., Mitnitski, A., & Rockwood, K. (2010). Prevalence and 10-year outcomes of frailty in older adults in relation to deficit accumulation. *Journal of the American Geriatrics Society*, *58*(4), 681–687. https://doi.org/10.1111/j.1532-5415.2010.02764.x.

Strandberg, T. E., & Pitkala, K. H. (2007). Frailty in elderly people. *Lancet*, *369*(9570), 1328–1329. https://doi.org/10.1016/S0140-6736(07)60613-8.

Walker, J., Lovett, R., Kukutai, T., Jones, C., & Henry, D. (2017). Indigenous health data and the path to healing. *Lancet*, *390*(10107), 2022–2023. https://doi.org/10.1016/S0140-6736(17)32755-1.

Walker, J. D., Andrew, M. K., Bronskill, S., Smylie, J., Warry, W., Henry, D., … Jacklin, K. (2019). *Ontario First Nations aging study: Overview and report*. Retrieved from https://141419f0-5602-433d-85d2-4d5a8ecfd5ec.filesusr.com/ugd/27ba04_de5760df918d40878b58103f2879fee9.pdf.

Walker, J. D., Rowe, R., & Jones, C. R. (2018). Describing the process of ethical conduct of research in an Ontario-wide First Nations diabetes research project. *CMAJ*, *190* (Suppl), S19–S20. https://doi.org/10.1503/cmaj.180479

Wilson, K., Rosenberg, M. W., & Abonyi, S. (2011). Aboriginal peoples, health and healing approaches: The effects of age and place on health. *Social Science & Medicine*, *72*(3), 355–364. https://doi.org/10.1016/j.socscimed.2010.09.022.