



Original Article / He Rangahau Motuhake

COVID-19 among Indigenous communities: Case studies on Indigenous nursing responses in Australia, Canada, New Zealand, and the United States

Terryann C. Clark^{1,12,13}, PhD, RN, Associate Professor, School of Nursing;
Ngāpuhi

Odette Best², PhD, RN, Professor, School of Nursing and Midwifery; *Gorreng Gorreng, Boonthamurra and Yugambeh*

Mona Lisa Bourque Bearskin³, PhD, RN, Research Chair & Associate Professor, School of Nursing; *Beaver Lake Cree Nation*

Denise Wilson⁴, PhD, RN, Professor, Māori Health; Taupua Waiora Māori Research Centre; *Tainui*

Tamara Power⁵, PhD, RN, Senior Lecturer, Susan Wakil School of Nursing and Midwifery; *Wiradjuri*

Wanda Phillips-Beck^{6,7}, PhD RN, Adjunct Professor, Department of Nursing; *Hollow Water First Nation*

Holly Graham⁸, PhD, RN, Associate Professor, Indigenous Research Chair, College of Nursing; *Thunderchild First Nation*

Katie Nelson⁹, MSN, RN, PhD Candidate, School of Nursing; *Western European Indigenous Ally*

Misty Wilkie¹⁰, PhD, RN, Professor, Department of Nursing; *Turtle Mountain Chippewa*

John Lowe¹¹, PhD, RN, Professor, School of Nursing; *Cherokee*

Coral Wiapo¹², PGDip, RN, Regional Coordinator, National Nurse Practitioner & Enrolled Nurse Workforce Programme; *Ngāti Whatua*

Teresa Brockie⁹, Assistant Professor, School of Nursing; *Aaniniin Nation*

Citation

Clark, T. C., Best, O., Bourque Bearskin, L., Wilson, D., Power, T., Phillips-Beck, T., Graham, H., Nelson, K., Wilkie, M., Lowe, J., Wiapo, C., & Brockie, T. (2021). COVID-19 among Indigenous communities: Case studies on Indigenous nursing responses in Australia, Canada, New Zealand, and the United States. *Nursing Praxis in Aotearoa New Zealand*, 37(3), 71-83.

<https://doi.org/10.36951/27034542.2021.037>

¹University of Auckland, Auckland, Aotearoa New Zealand ²University of Southern Queensland, Ipswich, Australia; ³Thompson Rivers University, Kamloops, BC, Canada; ⁴Auckland University of Technology, Auckland, Aotearoa New Zealand; ⁵University of Sydney; ⁶University of Manitoba; ⁷First Nation Health and Social Secretariat of Manitoba; ⁸University of Saskatchewan, Saskatoon, Canada; ⁹Johns Hopkins University, Baltimore, Maryland, US; ¹⁰Bemidji State University, Bemidji, Minnesota, US; ¹¹University of Texas, Austin, Texas, US; ¹²Mahitahi Hauora PHE, Whangarei, Aotearoa New Zealand;

¹³Corresponding Author: t.clark@auckland.ac.nz

Abstract

Globally, Indigenous Peoples experience disparate COVID-19 outcomes. This paper presents case studies from Aotearoa New Zealand, Australia, Canada, and the United States of America and explores aspects of government policies, public health actions, and Indigenous nursing leadership for Indigenous communities during a pandemic. Government under-performance in establishing Indigenous-specific plans and resources, burdened those countries with higher COVID-19 cases and mortality rates. First, availability of quality data is an essential element of any public health strategy, and involves disaggregated, ethnic-specific data on Indigenous COVID-19 cases, mortality rates, and vaccination rates. When data is unavailable, Indigenous Peoples are rendered invisible. Data sovereignty principles must be utilised to ensure that there is Indigenous ownership and protections of these data. Second, out of necessity, Indigenous communities expressed their self-determination by uniting to protect their Peoples and providing holistic and culturally meaningful care, gathering quality data and advocating. Indigenous leaders used an equity lens that informed national, state, regional, and community-level decisions relating to their Peoples. Third, at the forefront of the pandemic, Indigenous nursing leadership served as a trusted presence within Indigenous communities. Indigenous nurses often led advocacy, COVID-19 testing, nursing care, and vaccination efforts in various settings and communities. Indigenous nurses performed vital roles in a global strategy to reduce Indigenous health inequities during the COVID-19 pandemic and beyond. Fourth, historically, pandemics have heightened Indigenous Peoples' vulnerability. COVID-19 amplified Indigenous health inequities, underscoring the importance of high-trust relationships with Indigenous communities to enable rapid government



support and resources. Holistic approaches to COVID-19 responses by Indigenous peoples must consider the wider determinants of wellbeing including food and housing security. Findings from these case studies, demonstrate that Indigenous self-determination, data sovereignty, holistic approaches to pandemic responses alongside with Governmental policies, resources should inform vaccination strategies and future pandemic readiness plans. Finally, in any pandemic of COVID-19-scale, Indigenous nurses' leadership and experience must be leveraged for a calm, trusted and efficient response.

Keywords / Ngā kupu matua: case study / mātai tūāhua; COVID-19; data sovereignty / mana raraunga; global / ā-ao; Indigenous / iwi taketake; inequities / ngā korenga e ōrite; leadership / hautūtanga; nursing / mahi tapuhi; self-determination / tino rangatiratanga

Te Reo Māori translation

Te COVID-19 i waenga i ngā hapori iwi taketake: Ngā mātai tūāhua o ngā urupare tapuhi Iwi Taketake i Ahitereiria, i Kānata, i Aotearoa, me Amerika

Ngā ariā matua

He rerekē i ētahi atu rōpū tāngata ngā putanga hauora mō ngā Iwi Taketake huri noa i te ao, mō COVID-19. Tā tēnei tuhinga he tāpae mātai tūāhua mai i Aotearoa, i Ahitereiria, i Kānata, me Amerika, e tūhura nei i ētahi āhuetanga o ngā kaupapa here kāwanatanga, ngā mahi hauora tūmatanui, me te mahi hautū tapuhi iwi taketake mō ngā hapori iwi taketake i ngā wā o tētahi mate urutā. Nā te ngoikore o ngā tikanga a ngā kāwanatanga mō te whakatakoto mahere, rauemi hāngai tūturu ki te iwi taketake i whakataumaha aua whenua ki te pikinga ake o ngā pānga o COVID-19, me ngā pāpātanga matenga rawatanga. He wāhi matua te wātea mai o ngā raraunga kounga hira mō tētahi rautaki hauora tūmatanui, kei roto nei ētahi raraunga kua oti te kōwae, kia hāngai ki tēnā momo iwi, ki tēnā momo iwi, mō ngā pānga COVID-19 Iwi Taketake, te pāpātanga matenga rawatanga, me te pāpātanga whāngainga kano ārai. Mehemea kāore he raraunga i te wātea, kāore rawa e kitea atu ngā Iwi Taketake Me tino whakamahi ngā mātāpono mana raraunga kia noho tonu te rangatiranga ki te Iwi Taketake, kia tautiaki hoki aua raraunga. Tuarua, he mea tino nui kia tū pakari ngā hapori Iwi Taketake i runga i tō rātou tino rangatiratanga, nā te whakakotahi ki te tiaki i te taurimatanga matawhānui, hāngai ki te ahurea, nā te kōhi raraunga kounga nui, me te kauwhau tikanga. I riro nā te whakaaro iwi taketake i ārahi ngā mahi a ngā kaihautū iwi taketake kia arahina ngā whakatau ā-motu, ā-rohe kāwanatanga, ā-hapori hoki e pā ana ki ō rātou Iwi. Tuatoru, kei mua rawa i te aroākapa o te whawhai ki te mate urutā, i tū ngā kaihautū hei kanohi e whakaponotia ana i roto i ngā hapori Iwi Taketake. I riro nā ngā tapuhi iwi taketake i hautū te tini o ngā mahi kauwhau tikanga, whakamātautau COVID-19, taurimatanga tapuhi, whāngai kano ārai hoki i ngā horopaki me ngā hapori maha. I kawea hoki e ngā tapuhi iwi taketake ētahi mahi hira i tētahi rautaki ā-ao hei whakaheke i ngā korenga e ōrite o ngā āhuetanga hauora Iwi Taketake i te wā o te COVID-19, i tua atu hoki. Tuawhā, i roto i ngā mate urutā i roto i ngā rau tau kua hipa, kia noho whakaraerae ngā Iwi Taketake o te ao. Nā COVID-19 i whakapiki te noho whakaraerae o ngā Iwi Taketake, i whakaheke hoki te nui o ngā hononga whakaponotia ki ngā hapori Iwi Taketake, kia taea ai, kia horo hoki i te tautoko me tuku rauemi mai a te kāwanatanga. Me āta anga atu ngā ara matawhānui mō ngā urupare COVID-19 a ngā Iwi Taketake ki ngā āhuetanga whānui o te toiora, tae atu ki te nui o te kai mā te tangata, me te whare noho o te whānau. Ko tā ngā kitenga mai i ēnei mātainga tūāhua he whakaahua i te hira o te noho o te rangatiratanga Iwi Taketake, mana raraunga, ngā ara matawhānui ki te urupare mate urutā hei mea nui mō ngā rautaki whāngai kano ārai me ngā mahi takatū mō ngā mate urutā o raurangi, i te taha o ngā kaupapa here kāwanatanga. Hei kupu whakamutunga, i ngā urutā rahi pēnei i COVID-19, me tāpiri mai te hautūtanga me te tautōhito o ngā tapuhi Iwi Taketake mō tētahi urupare pakari, ka whakaponotia nuitia e te iwi, me te whai take anō.



Introduction

The COVID-19 pandemic has highlighted the importance of nursing, disproportionate burden of health inequities, and increased infection and death rates for Indigenous Peoples - accentuating the need for population-specific strategies in system responses. COVID-19 has impacted healthcare systems worldwide, with frontline nurses making critical decisions, supporting public health measures, and often leading efforts in Indigenous communities. Native Americans in the United States (US) have been disproportionately affected by COVID-19 (Hatcher et al., 2020), while the Indigenous Peoples of Aotearoa New Zealand, Australia, and Canada had lower infection rates compared to their general populations (Table 1), due to implementation of Indigenous-specific strategies (Power et al., 2020). However, we need to note that since submitting this paper, the COVID-19 Delta variant has rapidly changed the status of Indigenous Peoples in our respective countries. This has increased inequity in COVID-19 infection rates, deaths, and vaccination rates.

The 1918 influenza pandemic in Aotearoa yielded death rates seven times higher for Māori than non-Māori (King et al., 2020). Given historical and contemporary health inequities, Māori health experts urged the government to prioritise Māori-centred responses (Te Rōpū Whakakaupapa Urutā, 2020).

There are 4.9 million people in Aotearoa, and Māori comprise 16.5% of the population. On 1 September 2021, 14.4% of the 3,569 COVID-19 cases affected Māori, and six of the 27 deaths were Māori (Ministry of Health, 2021a). The lower-than-expected rates of COVID-19 can be attributed to stringent public health interventions, such as early border closure, national and regional lockdowns, and compulsory isolation for those returning to NZ; geographical isolation (Jefferies et al., 2020; Robert, 2020); and robust Indigenous policies, strategies, and actions (King et al., 2020; McMeeking & Savage, 2020).

By late August 2021, Australia had 46,728 COVID-19 cases and 986 deaths in two significant waves (Department of Health, 2021). The first wave of COVID-19 in January 2020 had peaked by the end of March. Only 149 Aboriginal and Torres Strait Island peoples (of approximately 800,000 Indigenous Australians) contracted COVID-19 with no deaths (Pannett, 2021). By late August 2021 however, the Delta variant (Department of Health, 2021) resulted

in 577 confirmed COVID-19 cases in Aboriginal and Torres Strait Islander peoples and two deaths (Department of Health, 2021). Aboriginal people in rural and remote communities, make up 33% of locally acquired cases (Department of Health, 2021).

In Canada, by mid-August 2021, COVID-19 infected approximately 1,451,969 individuals, resulting in over 26,701 deaths. Most cases (64%) and deaths (77.4%) in the Ontario and Quebec provinces are related to ageing, poverty, and homelessness (Government of Canada, 2021a). Despite the recovery of 98% of people testing positive, First Nations people living on reserves with COVID-19 accounted for 58% of Canada's mortality rate (Government of Canada, 2021b). In Lapointe-Shaw et al.'s (2020) recent study, Indigenous Peoples reported higher rates of COVID-19 symptoms (49.3 vs. 42.9%) and testing (3.7 vs. 1.1%) compared to other vulnerable populations.

While Native Americans comprise 0.7% of the US population, they accounted for 1.3% of COVID-19 cases in 2020 reported to the Centers for Disease Control (CDC) who were identified as Native American (Stokes et al., 2020). This does not account for those Native American cases where ethnicity was not asked, or reported (Conger, Gebeloff, & Oppel, 2021). In 23 states, the Native American incidence rate was 3.5 times greater than White people (Hatcher et al., 2020), with one in every 475 Native Americans dying from COVID-19. Native Americans comprise 16% of these 23 states but account for 68% of overall cases (Hatcher et al., 2020). COVID-19 cases significantly increased in households lacking indoor plumbing and potable water but decreased among reservations with English-speaking-only homes (Rodriguez-Lonebear et al., 2020). The Navajo Nation had over 10,000 COVID-19 cases that killed nearly 600 members (Navajo Department of Health, 2021) – a mortality rate higher than New York, Florida, and Texas combined (Walker, 2020). The pandemic illuminated the vulnerabilities of living on reservations because risk factors for COVID-19 are disproportionately higher (Leggat-Barr et al., 2021).

Indigenous Peoples' greater risks during pandemics stem from historical and contemporary government failures to address ongoing inequities and the effects of colonisation (Power et al., 2020). Poor health and poverty are associated with pandemic severity (Clay et al., 2019). Colonised people are vulnerable to higher rates of communicable and non-



Table 1: COVID-19 landscape in Aotearoa New Zealand, Australia, Canada, and the United States (as of September 21, 2021).

	Indigenous population (proportion of national population)	Cumulative confirmed cases per million people ^e (n= number of cases)	Cumulative number of confirmed Indigenous cases	Cumulative confirmed deaths per million people ^e (n=number of deaths)	Cumulative Indigenous deaths	Proportion of total eligible population vaccinated for COVID-19 ^e (all ethnic groups)	Percentage of fully vaccinated Indigenous Peoples
Aotearoa New Zealand	775,836 (16.5%) ^a	847.63 cases per million (n=4,119)	375 Māori cases ^f	5.55 deaths per million (n=27)	6 Māori deaths ⁱ	73% one dose 39% both dose	*48% Māori had 1st dose (n=274,022) 23% had two doses (n=131,725) ^f
Australia	798,400 (3.3%) ^b	3,504.28 cases per million (n=90,391)	743 Indigenous cases (as of 29 August) ^g Rates not reported routinely on Government website	45.99 death per million (n=1,186)	2 Indigenous deaths ^k	21% one dose 38% both doses	*36% eligible Indigenous Australians had 1 st dose (n=169,449) 23% had two doses (n=86,793) ^g
Canada	1,673,785 (4.9%) ^c	41,863.97 cases per million (n=1,589,602)	39421 among First Nations Reserves Communities in all Provinces ^h Unknown, total national Indigenous cases (i.e., those not on Reserves)	723.42 deaths per million (n=27,537)	413 deaths on First Nations Reserves ^h Unknown total Indigenous deaths, data not reported	6% one dose 70% both doses	Unknown total Indigenous vaccination rate However, the COVID Vaccination Coverage Survey estimated 57% First Nations and 45% of Métis adults had been vaccinated in May 2021 - although this was not a representative sample and had small numbers of Indigenous Peoples ^h
United States	2,900,000 single race; 5,200,000 combined race (1.7%) ^d	127,391.67 cases per million (n=43,403,216)	247, 032 Indigenous cases from Indian Health Services ⁱ Unknown, total national Indigenous cases (i.e., those not using IHS)	2,037.78 deaths per million (n=699,737)	7,425 Indigenous deaths reported via Indian Health Services ^l Unknown, total national Indigenous cases (i.e., those not using IHS)	9% one dose 54% both doses	54% at least 1 dose: 46% fully vaccinated--among those receiving care from IHS ^l Unknown total Indigenous vaccination rate

^a(Statistics New Zealand, 2021); ^b(Australian Bureau of Statistics, 2016); ^c(Statistics Canada, 2018); ^d(Norris et al., 2012); ^e(Our World in Data, 2021); ^f(Ministry of Health, 2021a); ^g(Department of Health, 2021a); ^h(Government of Canada, 2021a); ⁱ(IHS, 2021); ^j(Ministry of Health, 2021a); ^k(Department of Health, 2021a); ^l(CDC, n.d.). *Note, the vaccination roll-out in Australia and New Zealand was later than in Canada and USA.



communicable diseases, higher morbidity and mortality, and lower life expectancy (Lane, 2020). Ongoing food, water, hygiene, housing insecurity, and health insurance coverage challenges contribute to higher COVID-19 mortality rates (Lane, 2020; Power et al., 2020). Moreover, racism in healthcare negatively impacts Indigenous Peoples' access to quality and safe healthcare (Lane, 2020; Turpel-Lafond et al., 2020; Crengle, et al, 2012).

Reducing Indigenous health inequities should be a global priority (World Health Organization, 2021). However, Indigenous morbidity and mortality is often invisible during pandemics, particularly when ethnicity is either not captured or incorrect, or disaggregated data by ethnicity rates is unavailable (Lane, 2020; Power et al., 2020). The way in which nursing responds to Indigenous Peoples during a pandemic can make a difference. Therefore, the purpose of this paper is to present case studies from four high-income countries: Aotearoa New Zealand, Australia, Canada, and the US, to highlight two specific objectives: 1) how Indigenous nurses and communities facilitated responses to the COVID-19 pandemic alongside governing bodies; and 2) how government, Indigenous, and nursing actions influenced outcomes for Indigenous Peoples during the COVID-19 pandemic.

Aotearoa New Zealand

Government response

The New Zealand Government swiftly closed borders and established national lockdown protocols (Ministry of Health, 2021b). The Māori Health Directorate developed a COVID-19 Māori Response Action Plan (Ministry of Health, 2020b) that included traditional death practice (tangihanga) guidelines (Ministry of Health, 2021c). The Government also allocated \$56.5 million for a Māori-focused COVID-19 response (Parahi, 2020) and \$10 million for family (whānau) care packages (Ministry of Māori Development, 2020a). The Ministry of Health contracted Māori health providers and district health boards (DHBs) to provide a coordinated response for Māori, with varying success (Tame, 2021; Te One & Clifford, 2021)

Māori specific responses evoked resistance, highlighting public and institutional racism (Jones, 2020). The top-down allocation of personal protective equipment (PPE), testing swabs, and contracting for services by the Ministry of Health,

DHBs, and primary health organisations (PHOs) slowed responses and inadequately resourced providers (Pennington, 2020). The delay in getting PPE to providers, slowed the mobilisation of services, and information for Māori communities (Hurihanganui, 2020b), leaving frontline providers, nurses, and community workers vulnerable. An example from Northland to address these inequities, Mahitahi Hauora Primary Healthcare Entity initiated an equity dashboard to facilitate an extra 20% of PPE distribution to Māori providers (J. Davis, personal communication, 3 August 2021). The vaccine rollout also revealed inequity for Māori compared to other non-Māori ethnic groups. Cumulatively, these factors put considerable stress on Indigenous communities and providers, exposing a complex pipeline of information, contracting, and resource allocation.

Indigenous response

To address the lack of Māori response, Te Rōpū Whakakaupapa Urutā, a self-funded Māori expert alliance group, mobilised virtually to advocate early in the pandemic (Hurihanganui, 2020; Te Rōpū Whakakaupapa Urutā, 2020). Māori providers met the needs of their communities despite being under-resourced. For example, Ngāti Hine Hauora provided child health immunisations, food banks, water, hygiene packs, housing solutions, family violence and mental health screenings, and other advocacy services (Ngāti Hine Health Trust, 2020). Specifically, Māori community workers door-knocked in rural communities to ensure no families were unwell, hungry, unsafe, or lonely during lockdown. Māori grassroots actions also included road checkpoints to prevent virus spread (New Zealand Police, 2020).

Nursing response

Māori nurse leadership at the national level saw the Kaiwhakahaere (Māori lead) of the New Zealand Nurses Organisation, and at the international level Chief Nursing Officer, who is Māori, raise awareness of COVID-19 (Du Pleissis-Allan, 2021; World Nursing Report, 2020). Māori nurses comprise 7.5% of the total nursing workforce yet were disproportionately fronting many COVID-19 testing centres in rural and urban communities by leveraging community relationships and providing clinical and cultural reassurance. Such collective actions (to September 2021) led to higher testing and lower infection rates for Māori compared to other ethnic groups (Ministry of Health, 2020a). However, since this date, the Delta Variant, together with opening the borders to



Australia, has quickly changed the landscape in Aotearoa (following submission of this paper). The lack of prioritising vaccination among Māori populations has seen rapid increases in infection and hospitalisation among Māori.

In summary, the initial COVID-19 response in Aotearoa has been far from perfect, yet low rates of infection and death suggest that through Indigenous leadership and expressions of self-determination (*mana motuhake*), when coupled with appropriate resourcing and equitable government policies, Indigenous communities can provide culturally comprehensive care that meets Māori need and reduces inequity (Ministry of Māori Development, 2020b). As vaccination strategies roll out across Aotearoa, the same principles of *mana Motuhake*, high trust contracting with Māori health providers, Māori nurses, and communities must be utilised.

Australia

Government response

The increased morbidity and mortality for Aboriginal and Torres Strait Islander people in previous pandemics (Moodie et al., 2020) prompted the Australian government to collaborate with Aboriginal Community Controlled Health Organisations (ACCHOs) in their COVID-19 response (Griffiths et al., 2021). Initially, an Aboriginal and Torres Strait Islander advisory group guided development of the National Aboriginal and Torres Strait Islander COVID-19 Management Plan (Griffiths et al., 2021). Subsequent efforts included formation of respiratory clinics in ACCHOs, rapid point of care testing, COVID-19 training programmes for remote services, and travel restrictions. Despite the Management Plan including a remit to improve data collection on Aboriginal and Torres Strait Islander people's health outcomes, Indigenous data collection issues exist as Indigenous status is often not being recorded during COVID-19 testing, vaccination, contact tracing, and ambulance, emergency, and hospital admissions (Griffiths et al., 2021).

Indigenous response

The 143 ACCHOs across Australia provide essential services for Indigenous Peoples, resulting in the COVID-19 response for urban, regional, and remote Indigenous communities (National Aboriginal Community Controlled Health Organization, 2020). The ACCHO sector emerged from 1960s activism in response to blatant racism toward Indigenous

Peoples in mainstream health services. By the 1970s, ACCHOs were recognised health providers, employing Indigenous nurses for 50 years (Best, 2005; Best, 2012; Best & Gorman, 2016; Brockie et al., 2021). ACCHOs provide comprehensive primary care uniquely governed by a Board of Directors well-represented by Indigenous Peoples.

Nursing response

Kambu Aboriginal and Islander Corporation for Health in Ipswich, Queensland, is an ACCHO that opened in 1976 and has five clinics across a 60-kilometre radius (Ward, et al, 2014). Aboriginal registered nurse, Pam Mamm, was the first clinical nurse and instrumental in establishing the service (Kambu, n.d.). Kambu employed multiple Indigenous nurses (from Australia and NZ) who have been instrumental in the COVID-19 response. The Institute of Urban Indigenous Health (IUIH), a consortium of five ACCHOs in Southeast Queensland, and the Department of Health Queensland provided training for the COVID-19 response. IUIH created culturally safe messaging about COVID-19 and developed a three-phase pandemic plan (IUIH, 2020). By March 2020, Kambu converted its respiratory clinic into a dedicated site for safe and effective COVID-19 testing and patient assessments for people with respiratory symptoms. Kambu's Indigenous nurses and clinic coordinator led the development of processes for managing the clinic including rostering, booking, triaging patients, performing COVID-19 swabs, submitting reports to the IUIH and Department of Health, and coordinating COVID-19 vaccine administration (A. Bates, personal communication, 5 August 2021). The current challenge is now increasing vaccine uptake to ensure a COVID-19-free community.

Canada

Government response

Canada's lack of consistent Indigenous data in core datasets makes it challenging to compare COVID-19 rates and responses within First Nations, Inuit, and Métis populations (Skyles, 2020). The government established an Indigenous Community Support Fund to address immediate needs in First Nations, Inuit, and Métis communities (\$290 million). Additional research funding (\$27 million) to address COVID-19 supplemented government contributions, but only two grants (\$1 million total) targeted Indigenous populations. Since then, the Canadian Institute of



Health Research (CIHR) has committed additional funding (\$2 million) focused on Indigenous Peoples and COVID-19 knowledge synthesis, evaluation, and assessment (CIHR, 2020).

Indigenous response

Nearly one in five (19%) First Nations and 16% of Métis people living off-reserve with high levels of pre-existing health conditions and were not registered with a health provider; inadequate housing conditions; and lived in multigenerational households (Arriagada et al., 2020; Carling & Mankani, 2020). Compared to non-Indigenous counterparts, Indigenous Peoples reported COVID-19 significantly impacted their ability to meet financial obligations and essential needs (Arriagada et al., 2020). Six in ten Indigenous Peoples said their mental health worsened with the onset of physical distancing (Statistics Canada, 2018). Indigenous Peoples face disproportionate vulnerabilities due to high rates of chronic food-related illnesses and stress associated with post-traumatic stress disorder, overcrowded houses - particularly in neighbourhoods with food insecurity and poor healthcare access (Canadian Human Rights Commission, 2020).

In response, Indigenous Peoples strengthened regional capacities by improving access to traditional foods, medicines, and approaches to caring for one another (Saint-Girons et al., 2020). Indigenous communities exerted their sovereignty by protecting their communities despite healthcare inequities, colonisation, racism, discrimination, and elevated COVID-19 risk due to under-resourced public health systems (Arriagada et al., 2020; Jones, 2020). Urban Indigenous organisations provided essential services and food hampers to Elders and young families.

Led by First Nation leadership, a unique partnership developed between four First Nations organisations and the Province of Manitoba, establishing a First Nations Pandemic Response Coordination Team (PRCT). Swift negotiation and signing of data sharing agreements took place to establish the Manitoba First Nations controlled COVID-19 dashboard, allowing timely access to First Nations surveillance data (First Nations Health & Social Secretariat of Manitoba (FNHSSM), 2021). First Nations partner organisations consisted of: FNHSSM; Assembly of Manitoba Chiefs; Southern Chiefs Organization; and Manitoba Keewatinowi Okimakanak Inc., representing all First Nations and tribal areas in Manitoba. The PCRT also created rapid response

teams, consisting of FNHSSM nurses, and other health professionals from multiple provincial jurisdictions, who were deployed into First Nation communities to assist with COVID-19 testing and contact tracing to avoid overwhelming local healthcare systems.

Nursing response

Indigenous nurses have been overwhelmed providing clinical care throughout the pandemic. Currently, they grapple with ongoing health inequities; an opioid epidemic (Canadian Centre on Substance Use and Addiction, 2020; CIHR 2020); and the discovery of unmarked graves of children who attended residential schools in Tk'emlups te Secwépemc, also known as Kamloops British Columbia (Newton, 2021). This discovery intensified pain across the country that survivors, their families, and all Indigenous Peoples and communities already felt and confirmed a truth they had long known (Newton, 2021). Current events add to the historical and contemporary trauma Indigenous Peoples face in Canada.

United States

Government response

The US Government's disregard for its Treaty obligations, historical trauma, social determinants of health, and racial inequities contributes to inadequate health and socioeconomic outcomes of Native Americans, also known as American Indians, First Americans, Indigenous Americans, and other terms (such as names specific to Hawaii or other US territories), who comprise 6.9 million of the US population (Browne et al., 2016; Gracey & King, 2009; Hatcher et al., 2020). This disregard created a perfect storm for COVID-19's impact on Native Americans. For example, the Navajo Nation, established by treaty in 1868, extends over 17 million acres and multiple states and is home to almost 400,000 tribal members. Poor access to basic housing, water, and food contributed to high morbidity and mortality rates during the COVID-19 pandemic, with 30-40% of tribal members left without electricity or running water. In this paper, only those Native Americans served by the Indian Health Service (IHS) are discussed, due to insufficient disaggregated national data.

The Indian Health Service (IHS) comprises 12 geographical areas, 37 hospitals, and 113 health centres/stations (IHS, n.d.) and provides federal health services to approximately 2.6 million



American Indians and Alaska Natives belonging to 574 federally recognised tribes in 37 states. The IHS is chronically under-resourced which made providing a comprehensive public health response to COVID-19 complicated (IHS, 2016). Further, determining unmet health needs is difficult because of the lack of data for those not currently served by the IHS.

Indigenous response

Tribal Nations' COVID-19 response differs from the remainder of the country. Tribes faced significant delays in receiving federal funding from the Coronavirus Aid, Relief, and Economic Security (CARES) Act and Centers for Disease Control and Prevention. Rather than dispersing funds through IHS, tribes submitted non-competitive grant applications – a process that delayed funding for months and allowed applications from non-Native, not-for-profit corporations (Owen et al., 2021). These delays led many tribes to take control of their communities' health. For example, in April 2020, federally recognised tribes, Cheyenne River and Oglala Sioux, initiated stay-at-home orders for their reservations and incorporated border checkpoints preventing non-residents from entering unless they were essential employees or had tribal travel permits. However, the state did not implement a similar mitigation strategy (Ortiz, 2020). As sovereign nations, tribes have the authority to protect their communities, despite being legally challenged by some state legislators (Ortiz, 2020).

Nursing response

Native American nurses comprise 60% of the nursing workforce in Tribal/Indian Health/Urban health centres and have been at the forefront of the COVID-19 pandemic (Brockie et al., 2021). These nurses are integral for mass testing, contact tracing, providing wrap-around services, distributing PPE and food boxes during isolation and quarantine, and proactively identifying high-risk individuals. Native American nurses using the Google Meets app assessed youth wellbeing in rural and remote areas at risk of depression, suicide, and substance use. Nurses on the Fort Belknap Reservation (Northern Montana) devised a vaccination strategy starting with healthcare personnel, essential workers, and Tribal Elders, prioritising Native language speakers. They also established COVID-19 housing units in each community. These grassroots efforts saved lives and

resulted in a 67% community vaccination rate (K. Adams, personal communication, 12 August 2021).

Discussion

These case studies show how Indigenous communities' self-determined actions coupled with evidence-based public health protections and policies, promoted better outcomes for Indigenous Peoples. Indigenous leadership enabled supported Indigenous communities to protect their own and resulted in radically fewer cases of COVID-19 infections and deaths when compared to non-Indigenous populations among those from Aotearoa, Australia, and Canada and slowed the infection rates in the US. Indigenous health and social services' comprehensive approaches to COVID-19 prevention requires a holistic approach that recognises social determinants of wellbeing, culturally competent care, and Indigenous leadership. Indigenous nurses are often leading on the frontlines in all countries, leveraging trusted relationships with their communities to get people tested, masked, and physically distanced. Indigenous communities with access to quality data could monitor and hold their governments and health providers accountable, highlighting the importance of Indigenous data sovereignty.

Indigenous Peoples have demonstrated their resilience and ability to innovate in a pandemic. Leaning on Western-based approaches in a pandemic further entrenches Indigenous health disparities and perpetuates mistrust against government agencies. The COVID-19 pandemic has intensified long-standing social and health disparities (i.e., poverty, access to clean water, housing, comorbidity) between Indigenous and non-Indigenous Peoples, accentuating Indigenous Peoples' vulnerabilities to COVID-19. Failing to address these factors undermines strategies by governments and Western mainstream health providers often forces Indigenous communities to rally independently.

Indigenous communities established reservation-based stay-at-home policies and placed roadblocks to minimise COVID-19 transmission into Indigenous communities, supplemented by messaging and Indigenous data sovereignty strategies to monitor wellbeing. In the US, philanthropic support for traditional foods, hygiene packs, and masks contributed to holistically addressing the financial and social fallout from COVID-19 in Indigenous



communities. Well-resourced Indigenous health services, nurses, and community workers fronting Indigenous health services and campaigns are essential to improving community engagement. Despite some governments' failures, Indigenous Peoples enacted their self-determination to mobilise their communities to protect their people.

Indigenous nurses have a great deal of experience with community public health and addressing health inequity. Their knowledge is crucial for running efficient and comprehensive healthcare systems (Bourque Bearskin et al., 2020). Advancing Indigenous health equity requires Indigenous nursing practices to address systemic barriers, such as housing and food insecurity during the COVID-19 pandemic (Carling & Mankani, 2020). Indigenous Peoples often prefer care by Indigenous nurses because they embody a relational ethic of care based on respectful, authentic, and anti-racist relationships grounded in reciprocity and accountability (Bourque Bearskin et al., 2021).

The COVID-19 pandemic reinforces the need for continued advocacy to increase the number of Indigenous nurses in leadership roles to enhance access to culturally safe, responsive care. Indigenous nurses are equipped to keep communities safe with nursing knowledge, cultural expertise, and established community connections. Indigenous nurses are the nexus between advocacy, research, engagement with Indigenous knowledge systems, and decolonisation. We assert that Indigenous nurses are experts necessary for planning, preparing, and implementing policies to improve the health of Indigenous communities - especially during pandemics.

The United Nations Declaration on the Rights of Indigenous Peoples outlines Indigenous Peoples' right to data sovereignty, dictating the collection, use, and application of data (Carroll et al., 2021; United Nations, 2019). Quality, ethnically disaggregated data is required to monitor outcomes and hold governments accountable for Indigenous health equity. Data needed includes testing, incidence, and vaccine rates, morbidity and mortality rates, and other community measures (Carroll et al., 2021). Nonetheless, data collection and availability remain sub-standard for Indigenous Peoples for COVID-19 (Table 1) and tends to be deficit-oriented, lacking accuracy, relevance and Indigenous interpretation (Griffiths et al., 2021).

Infiltration of the Delta variant and other COVID-19 strains into Indigenous communities has yet to fully play out. Accordingly, it is imperative to listen to Indigenous communities and foster their self-determination. Lessons can be learned from the COVID-19 vaccine roll-out across the four countries (Table 2). For example, despite Native Americans' disproportionate COVID-19 hospitalisation and death rates in the US, they now have the highest COVID-19 vaccination rate (54% at least one dose: 46% fully vaccinated) of all groups (Read, 2021). This is predominantly due to tribes and tribal organisations overseeing vaccine roll-out in their respective communities. In contrast, Aotearoa New Zealand and Australia had very low hospital and death rates among Indigenous populations prior to the Delta variant but the roll-out of vaccinations largely controlled by Government agencies has been slow. If Indigenous specific strategies are not applied, this could disproportionately affect Indigenous peoples. Resourcing with high-trust contracting practices in health and social services will help Indigenous health services, nurses, and other community workers facilitate access to care. To genuinely improve equity, Indigenous Peoples need different responses, culturally safe strategies, and adequate resources to yield reductions in morbidity and mortality in current and future pandemics.

There are limitations with the case studies presented, as they are not representative of all actions and strategies utilised by Indigenous Peoples in the four nations. We acknowledge that Indigenous Peoples are diverse, with different pandemic experiences and government responses that could not be fully explored within the confines of this paper. Furthermore, at the time of writing, data and contexts are rapidly changing with new COVID-19 variants.

Conclusions

These case studies highlight a range of strategies by four high-income colonised countries in their responses to COVID-19 for Indigenous communities. While governments' responses vary greatly, they have underperformed for Indigenous Peoples. Indigenous communities have asserted their self-determination to lessen the gaps in service delivery, policy, data, and care provision. Indigenous nurses have used their leadership to navigate the complexities between Western and Indigenous priorities. Lessons learned from these case studies



can be helpful for future pandemics and vaccine rollouts. Genuinely addressing Indigenous health inequity during the COVID-19 pandemic requires a commitment to supporting Indigenous nurses and the self-determination of Indigenous Peoples – they know what is best for their people.

Acknowledgements: The authors also wish to acknowledge communities who have lost loved ones unnecessarily during the COVID-19 pandemic. We write to honour you and advocate for a better future for us all.

References

- Arriagada, P., Hahmann, T., & O'Donnell, V. (2020). *Indigenous people in urban areas: Vulnerabilities to the socioeconomic impacts of COVID-19*. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00023-eng.htm>
- Australian Bureau of Statistics. (2016). *Estimates of Aboriginal and Torres Strait Islander Australians*. <http://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/jun-2016>
- Best, O. (2005). *Community – control theory and practice: A case study of the Brisbane Aboriginal and Islander community health Service*. [Master's Thesis, Griffith University, Queensland]. <https://research-repository.griffith.edu.au/handle/10072/366110>
- Best, O. (2012). *Yatdjugilin: The stories of Queensland Aboriginal nurses 1950-2005*. [Doctoral dissertation, University of Southern Queensland]. https://eprints.usq.edu.au/21525/2/Best_2011_whole.pdf
- Best, O., & Gorman, D. (2016). Some of us pushed forward and let the world see what could be done": Aboriginal Australian nurses and midwives, 1900-2005. *Labour History*, 111, 194-169. <https://doi.org/10.5263/labourhistory.111.0149>
- Bourque Bearskin, R.L., Kennedy, A. & Joseph, C. (2020). Bearing witness to Indigenous health nursing. *Witness: The Canadian Journal of Critical Nursing Discourse*, 2, 1-8. <https://doi.org/10.25071/2291-5796.70>
- Bourque Bearskin, L., Kennedy, A., Kelly, L. P., & Chakanyuka, C. (2021). Indigenist nursing: Caring keeps us close to the source. In M. Hills, J. Watson, & C. Cara (Eds.). *Creating a caring science curriculum: A relational emancipatory pedagogy for nursing* (2nd ed.; pp. 249–270). Springer Publishing.
- Brockie, T., Clark, T., Best, O., Power, T., Bourque Bearskin, L., Kurtz, D., Lowe, J., & Wilson, D. (2021). Indigenous social exclusion to inclusion: Case studies on Indigenous nursing leadership in four high income countries. *Journal of Clinical Nursing*. Advance online publication. <https://doi.org/10.1111/jocn.15801>
- Browne, A. J., Varcoe, C., Lavoie, J., Smye, V., Wong, S. T., Krause, M., Tu, D., Godwin, O., Khan, K., & Fridkin, A. (2016). Enhancing health care equity with Indigenous populations: evidence-based strategies from an ethnographic study. *BMC Health Services Research*, 16, 544. <https://doi.org/10.1186/s12913-016-1707-9>
- Canadian Centre on Substance Use and Addiction. (2020). *Impacts of the COVID-19 pandemic on people who use substances: What we heard*. Author. <https://www.ccsa.ca/sites/default/files/2020-07/CCSA-COVID-19-Impacts-on-People-Who-Use-Substances-Report-2020-en.pdf>
- Canadian Human Rights Commission (2020, March 31). *Inequality amplified by COVID-19 crisis*. Author. <https://www.chrc-ccdp.gc.ca/en/resources/inequality-amplified-covid-19-crisis>
- Canadian Institute of Health Research (2020). *Best brains exchange report. Mental health outcomes and impact assessments*. The Knowledge Strategy Unit & Science Policy Division Impact Assessment Agency of Canada. <https://www.canada.ca/content/dam/iaac-acei/documents/research/Best-Brains-Exchange-Report-February-2020.pdf>
- Carling, A., & Mankani, I. (2020). *Systemic inequities increase Covid-19 risk for Indigenous people in Canada*. Human Rights Watch. <https://www.hrw.org/news/2020/06/09/systemic-inequities-increase-covid-19-risk-indigenous-people-canada>
- Carroll, S. R., Akee, R., Chung, P., Cormack, D., Kukutai, T., Lovett, R., Suina, M., & Rowe, R. K. (2021). Indigenous peoples' data during COVID-19: From external to internal. *Frontiers in Sociology*. <https://doi.org/10.3389/fsoc.2021.617895>
- Centres for Disease Control and Prevention (CDC). (n.d.). *COVID data tracker*. US Department of Health and Human Services. <https://covid.cdc.gov/covid-data-tracker/index.html#vaccination-demographics-trends>
- Clay, K., Lewis, J., & Severnini, E. (2019). What explains cross-city variation in mortality during the 1918 influenza pandemic? Evidence from 438 US cities. *Economics and Human Biology*, 35, 42-50. <https://doi.org/10.1016/j.ehb.2019.03.010>
- Crengle, S., Robinson, E., Ameratunga, S., Clark, T., & Raphael, D. (2012). Ethnic discrimination prevalence and associations with health outcomes: Data from a nationally representative cross-sectional survey of secondary school students in New Zealand. *BMC Public Health*, 12, 1-11. <https://doi.org/10.1186/1471-2458-12-45>
- Department of Health. (2021). *Coronavirus disease (COVID-19) epidemiology reports, Australia 2020-2021*. Australian Government. <https://www1.health.gov.au/internet/main/publishing.nsf/Content/novel-coronavirus-2019-ncov-weekly-epidemiology-reports-australia-2020.htm?fbclid=IwAR2blvxb0HjZVDQUlzsU0MeqYfNYIXlOg1dkCH2BdXjk3glYXy8pluvjt4>
- Du Pleissis-Allan, H. (2021, August 20). *Nurses' organisation: Pressure from Delta piling on nurses*. NewsTalk ZB. <https://www.newstalkzb.co.nz/on-air/heather-du-pleissis-allan-drive/audio/kerri-nuku-pressure-from-delta-piling-on-nurses/>
- First Nations Health and Social Secretariat of Manitoba (FNHSSM). (2021). *COVID-19 Pandemic Response*



- Coordination Information. Author. <https://www.fnhssm.com/covid-19>
- Government of Canada. (2021a). *COVID-19 daily epidemiology update*. <https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html#a1>
- Government of Canada, (2021b). Coronavirus (COVID-19) in Indigenous communities. Author. <https://www.sac-isc.gc.ca/eng/1598625105013/1598625167707>
- Gracey, M., & King, M. (2009). Indigenous health part 1: Determinants and disease patterns. *The Lancet*, 374(9683), P65-75. [https://doi.org/10.1016/S0140-6736\(09\)60914-4](https://doi.org/10.1016/S0140-6736(09)60914-4)
- Griffiths, K., Ring, I., Madden, R., & Jackson Pulver, L. (2021). In the pursuit of equity: COVID-19, data and Aboriginal and Torres Strait Islander people in Australia. *Statistical Journal of the IAOS*, 37, 37-45. <https://doi.org/10.3233/sji-210785>
- Hatcher, S.M., Agnew-Brune, C., Anderson, M., Zambrano, L. D., Rose, C. E., Jim, M. A., Baugher, A., Liu, G. S., Patel, S. V., Evans, M. E., Pindyck, T., Dubray, C. L., Rainey, J. J., Chen, J., Sadowski, C., Winglee, K., Penman-Aguilar, A., Dixit, A., Claw, E., ... McCollum, J. (2020). COVID-19 among American Indian and Alaska Native Persons - 23 States, 31 January - 3 July 2020. *MMWR Morbidity and Mortality Weekly Report*, 69, 1166-1169. <http://dx.doi.org/10.15585/mmwr.mm6934e1>
- Health and Disability System Review. (2020). *Health and Disability System Review: Final Report: Pūrongo Whakamutunga*. New Zealand Government. <https://systemreview.health.govt.nz/final-report>
- Hobbs, M., Ahuriri-Driscoll, A., Marek, L., Campbell, M., Tomintz, M., & Kingham, S. (2019). Reducing health inequity for Māori people in New Zealand. *The Lancet*, 394(10209), 1613-1614. [https://doi.org/10.1016/S0140-6736\(19\)30044-3](https://doi.org/10.1016/S0140-6736(19)30044-3)
- Hurihanganui, T. (2020, May 4). *Māori health professionals left out of Epidemic Response Committee meetings*. Radio New Zealand. <https://www.rnz.co.nz/news/te-manu-korihi/415747/maori-health-professionals-left-out-of-epidemic-response-committee-meetings>
- Indian Health Service (IHS). (2021). *Coronavirus (COVID-19)*. US Department of Health and Human Services. <https://www.ihs.gov/coronavirus/>
- Indian Health Service (IHS). (2016). *Indian Health Service briefing*. US Department of Health and Human Services. https://www.ihs.gov/sites/newsroom/themes/responsive2017/display_objects/documents/2016_Speeches/IHSBriefingPresentation10092016.pdf
- Indian Health Service (IHS). (n.d.). *Part I - Indian Health Service structure*. US Department of Health and Human Services. <https://www.ihs.gov/PublicInfo/publications/Trends97/tds97pt2.pdf>
- Institute for Urban Indigenous Health (IUIH). (2020). *The IUIH system of care*. <https://www.iuih.org.au/>
- Jefferies, S., French, N., Gilkison, C., Graham, G., Hope, V., Marshall, J., McElnay, C., McNeill, A., Muellner, P., Paine, S., Prasad, N., Scott, J., Sherwood, J., Yang, L., & Priest, P. (2020). COVID-19 in New Zealand and the impact of the national response: A descriptive epidemiological study. *The Lancet*, 5(11), E612-E623. [https://doi.org/10.1016/S2468-2667\(20\)30225-5](https://doi.org/10.1016/S2468-2667(20)30225-5)
- Jones, R. (2020). *Why equity for Māori must be prioritised during the COVID-19 response*. The University of Auckland New Zealand. <https://www.auckland.ac.nz/en/news/2020/03/20/equity-maori-prioritised-covid-19-response.html>
- Kambu. (n.d.). *Our history*. Author. <https://kambuhealth.com.au/our-history.php>
- Lane, R. (2020). *The impact of COVID-19 on Indigenous Peoples*. United Nations Department of Economic and Social Affairs. https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/PB_70.pdf
- Lapointe-Shaw, L., Rader, B., Astley, C., Hawkins, J., Bhatia, D., Schatten, W, Lee, T., Liu, J., Ivers, N., Stall, N., Gournis, E., Tuite, A, Fisman, D, Bogoch, I., & Brownstein, J. (2020). Web and phone-based COVID-19 syndromic surveillance in Canada: A cross-sectional study. *PLoS ONE* 15(10), e0239886. <https://doi.org/10.1371/journal.pone.0239886>
- Leggat-Barr, K., Uchikoshi, F., & Goldman, N. (2021). COVID-19 risk factors and mortality among Native Americans. *Demographic Research*, 45, 1185-1218. <https://doi.org/10.4054/DemRes.2021.45.39>
- McMeeking, S., & Savage, C. (2020). Māori responses to COVID-19. *Policy Quarterly*, 16(3), 36-41. <https://doi.org/10.26686/pq.v16i3.6553>
- Ministry of Health. (2021a). *COVID-19: Current cases*. New Zealand Government. <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-data-and-statistics/covid-19-current-cases>
- Ministry of Health. (2021b). *COVID-19: Border controls*. New Zealand Government. <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-response-planning/covid-19-border-controls>
- Ministry of Health. (2021c). *COVID-19: Deaths, funerals and tangihanga*. New Zealand Government. <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-information-specific-audiences/covid-19-deaths-funerals-and-tangihanga>
- Ministry of Health. (2020a). *Testing for COVID-19*. New Zealand Government. <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-data-and-statistics/testing-covid-19>
- Ministry of Health. (2020b). *Updated COVID-19 Māori response action plan*. New Zealand Government. <https://www.health.govt.nz/publication/updated-covid-19-maori-response-action-plan>
- Ministry of Māori Development. (2020a). *Māori support package delivers for whānau*. New Zealand Government. <https://www.beehive.govt.nz/release/m%C4%81ori-support-package-delivers-wh%C4%81nau>



- Ministry of Māori Development. (2020b). *Whānau Ora*. New Zealand Government. <https://www.tpk.govt.nz/en/whakamahia/whanau-ora/about-whanau-ora>
- Moodie, N., Ward, J., Dudgeon, P., Adams, K., Altman, J., Casey, D., Cripps, K., Davis, M., Derry, K., Eades, S., Faulkner, S., Hunt, J., Klein, E., McDonnell, S., Ring, I., Sutherland, S., & Yap, M. (2020). Roadmap to recovery: Reporting on a research taskforce supporting Indigenous responses to COVID-19 in Australia. *Australian Journal of Social Issues* 56, 4-16. <https://doi.org/10.1002/ajs4.133>
- National Aboriginal Community Controlled Health Organization. (2020). *Our members*. Australian Government. <https://www.naccho.org.au/members>
- Navajo Department of Health. (2021). *Dikos Ntsaaígíí-19 (COVID-19) Navajo Nation*. Author. <https://www.ndoh.navajo-nsn.gov/COVID-19>
- Newton, P. (2021, July 13). *More unmarked graves discovered in British Columbia at a former Indigenous residential school known as 'Canada's Alcatraz'*. CNN. <https://www.cnn.com/2021/07/13/americas/canada-unmarked-indigenous-graves/index.html>
- New Zealand Police. (2020). *Police position on COVID-19 checkpoints*. New Zealand Government. <https://www.police.govt.nz/news/release/police-position-covid-19-checkpoints>
- Ngāti Hine Health Trust. (2020). *Ngāti Hine Health Trust Annual Report 2020*. <http://pub.flowpaper.com/docs/http://nhht.co.nz/wp-content/uploads/2020/11/NHHT%20Annual%20Report%20FINAL%202019-2020%20reduced.pdf>
- Norris, T., Vines, P. L., & Hoefel, E. M. (2012). *The American Indian and Alaska Native population: 2010 census briefs*. United States Census Bureau. <https://www.census.gov/prod/cen2010/briefs/c2010br-10.pdf>
- Ortiz, E. (2020, November 25). *As South Dakota takes hands-off approach to coronavirus, Native Americans feel vulnerable*. NBC News. <https://www.nbcnews.com/news/us-news/south-dakota-takes-hands-approach-coronavirus-native-americans-feel-vulnerable-n1248868>
- Our World in Data. (2021). *Coronavirus (COVID-19)*. Global Change Data Lab. <https://ourworldindata.org/>
- Owen, M. J., Sundberg, M. A., Dionne, J., & Kosobuski, A. W. (2021). The impact of COVID-19 on American Indian and Alaska Native communities: A call for better relational models. *American Journal of Public Health*, 111, 801-803. <https://doi.org/10.2105/AJPH.2021.306219>
- Pannett, R. (2021, April 9). *Australia made a plan to protect Indigenous elders from covid-19. It worked*. The Washington Post. https://www.washingtonpost.com/world/asia_pacific/australia-coronavirus-aboriginal-indigenous/2021/04/09/7acd4d56-96a4-11eb-8f0a-3384cf4fb399_story.html
- Parahi, C. (2020, March 22). *\$56.5m to be spent on Māori coronavirus response package*. Stuff. <https://www.stuff.co.nz/national/health/coronavirus/120473692/57m-to-be-spent-on-mori-coronavirus-response-package>
- Pennington, P. (2020, March 27). *Not enough protective medical gear available despite govt assurances – supplier*. Radio New Zealand. <https://www.rnz.co.nz/news/national/412715/not-enough-protective-medical-gear-available-despite-govt-assurances-supplier>
- Power, T., Wilson, D., Best, O., Brockie, T., Bourque Bearskin, L., Millender, E., & Lowe, J. (2020). COVID-19 and Indigenous Peoples: An imperative for action. *Journal of Clinical Nursing*, 29, 2737-2741. <https://doi.org/10.1111/jocn.15320>
- Reid, R. (2021, August 12). *Despite obstacles, Native Americans have the nation's highest COVID-19 vaccination rate*. Los Angeles Times. <https://www.latimes.com/world-nation/story/2021-08-12/native-american-covid-19-vaccination>
- Robert, A. (2020). Lessons from New Zealand's COVID-19 outbreak response. *The Lancet*, 5(11), E569-E570. [https://doi.org/10.1016/S2468-2667\(20\)30237-1](https://doi.org/10.1016/S2468-2667(20)30237-1)
- Rodriguez-Lonebear, D., Barceló, N. E., Akee, R., & Carroll, S. R. (2020). American Indian reservations and COVID-19: Correlates of early infection rates in the pandemic. *Journal of Public Health Management and Practice*, 26, 371-377. <https://doi.org/10.1097/PHH.0000000000001206>
- Saint-Girons, M., Joh-Carnella, N., Lefebvre, R., Blackstock, C., & Fallon, B. (2020). *Equity concerns in the context of COVID-19: A focus on First Nations, Inuit, and Métis communities in Canada*. Canadian Child Welfare Research Portal. <https://cwrp.ca/publications/equity-concerns-context-covid-19-focus-first-nations-inuit-and-metis-communities>
- Skyles, C. (2020). Colonialism of the curve: Indigenous communities and bad COVID data. Yellowhead Institute. <https://yellowheadinstitute.org/wp-content/uploads/2020/05/covid-19-colonialism-of-the-curve-brief.pdf>
- Statistics Canada. (2018). *Aboriginal Population Profile: 2016 Census*. Statistics Canada Catalogue no. 98-510-X2016001. Ottawa. <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/abpopprof/index.cfm?Lang=E>
- Stokes, E., Zambrano, L., Anderson, K., Marder, E., Raz, K., Felix, S., Tie, Y., & Fullerton, K. (2020). Coronavirus disease 2019 case surveillance: United States, 22 January–30 May 2020. *MMWR Morbidity and Mortality Weekly Report*, 69, 759–65. <http://dx.doi.org/10.15585/mmwr.mm6924e2>
- Tame, J. (2021, November 6). *Māori disparity: The greatest failure of NZ's Covid response?* 1News. <https://www.1news.co.nz/2021/11/06/maori-disparity-the-greatest-failure-of-nzs-covid-response/>
- Te One, A., & Clifford, C. (2021). Tino Rangatiratanga and well-being: Māori self-determination in the face of COVID-19. *Frontiers in Sociology*, 6, Article no. 613340. <https://doi.org/10.3389/fsoc.2021.613340>
- Turpel-Lafond, M. E., Johnson, H., & Charles, G. (2020). *In plain sight: Addressing Indigenous-specific racism and discrimination in BC health care*.



<https://engage.gov.bc.ca/app/uploads/sites/613/2020/11/In-Plain-Sight-Full-Report.pdf>

Te Rōpū Whakakaupapa Urutā. (2020). *Te Rōpū Whakakaupapa Urutā position statement.*

<https://www.uruta.maori.nz/policy>

United Nations. (2019). *The protection and use of health-related data: Report.*

<https://www.ohchr.org/EN/Issues/Privacy/SR/Pages/HealthRelatedData.aspx>

Walker, M. (2020, September 29). *Pandemic highlights deep-rooted problems in Indian Health Service.* The New York Times.

<https://www.nytimes.com/2020/09/29/us/politics/coronavirus-indian-health-service.html>

Ward, R., Fredericks, B., Best, O. (2014). *Community controlled health services: What they are and how they work.* Yatdjuligin Aboriginal and Torres Strait Islander Nursing & Midwifery Care. Cambridge Press.

World Health Organization. (2021, August 20). *Lower-income countries and Indigenous populations receive WHO assistance amid the ongoing threat of COVID-19.*

<https://www.who.int/news-room/feature-stories/detail/lower-income-countries-and-indigenous-populations-receive-who-assistance-amid-the-ongoing-threat-of-covid-19>

World Nursing Report. (2020, October 7). *Former Chief Nurse, Margareth Broodkoorn: World Nursing Report 2020 and its relevance to COVID-19.* YouTube.

https://www.youtube.com/watch?v=cuNSR20_J44

Funding: None

Conflicts of Interest: None