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## Comment

- Thomas S, Thomas T, Bosch RJ, et al. Effect of maternal vitamin B12 supplementation on cognitive outcomes in south Indian children: a randomized controlled clinical trial. Matern Child Health J 2019; 23: 155–63.
- 4 Srinivasan K, Thomas S, Anand S, et al. Vitamin B-12 supplementation during pregnancy and early lactation does not affect neurophysiologic outcomes in children aged 6 years. J Nutr 2020; 150: 1951–57.
- 5 D'souza N, Behere RV, Patni B, et al. Pre-conceptional maternal vitamin B12 supplementation improves offspring neurodevelopment at 2 years of age: PRIYA trial. Front Pediatr 2021; 9: 755977.
- 6 Yajnik CS, Behere RV, Bhat DS, et al. A physiological dose of oral vitamin B-12 improves hematological, biochemical-metabolic indices and peripheral nerve function in B-12 deficient Indian adolescent women. PLoS One 2019; 14: e0223000.
- Flores-Guerrero JL, Minovic I, Groothof D, et al. Association of plasma concentration of vitamin B12 with all-cause mortality in the general population in the Netherlands. JAMA Netw Open 2020; 3: e1919274.
- Forgie AJ, Pepin DM, Ju T, et al. Over supplementation with vitamin B12 alters microbe-host interactions in the gut leading to accelerated Citrobacter rodentium colonization and pathogenesis in mice. Microbiome 2023: 11: 21.
- 9 Sachdev HS, Ghosh S, Gupta A, Thomas T, Kurpad AV. Locally validated biomarker cutoffs should inform micronutrient deficiency burdens. Lancet Glob Health 2023; 11: e338.



## Indigenous health-care sovereignty defines resilience to the COVID-19 pandemic

Published Online April 18, 2023 https://doi.org/10.1016/ S0140-6736(23)00684-0 As of March 1, 2023, 2715 089 COVID-19 cases and 29717 deaths from COVID-19 have been recorded in the Arctic, which encompasses Iceland, Greenland, Alaska, the Faroe Islands, and northern parts of Canada, Finland, Norway, Russia, and Sweden. Although these numbers are devastating, the COVID-19 pandemic was less severe in many remote and Indigenous Arctic communities than in southern parts of the Arctic states.<sup>2</sup> For example, the COVID-19 case-fatality ratios in most boroughs of Alaska with a majority Indigenous population ranged from 0.1% to 0.4%, compared with 1.1% in the USA as a whole.1 COVID-19 death rates in Greenland, the Canadian Arctic, and the Norwegian Arctic were 2-3 times lower than the overall rates for Denmark, Canada, and Norway.¹ These differences in outcome were seen despite the well known vulnerabilities of Arctic Indigenous

populations—such as higher rates of diabetes, obesity, and respiratory infections—which are exacerbated by geographical barriers to health services, political disenfranchisement, crowded housing, poor sanitation, and other infrastructure issues.<sup>3-5</sup>

Although remoteness can create structural difficulties in responding to a pandemic, it could also delay the onset and therefore reduce the effects of the pandemic.<sup>6</sup> A key factor of the COVID-19 response in Arctic Indigenous communities was their ability and capacity to exercise control over their health-care systems and homelands-ie, the health-care sovereignty of the Indigenous Peoples. Such control rests in the capability of Indigenous Peoples to make their own decisions about pandemic public health measures, such as quarantines and vaccinations, therefore greatly increasing the success of these measures. Indigenous authority, autonomy, and institutions, as well as a community-centred approach driven by Indigenous Peoples and focused on cultural relevance and the use of Indigenous health-care providers, appear to have been crucial in mitigating the effects of COVID-19 in the Arctic.7

Many Indigenous communities learned from previous disease outbreaks, such as the 1918 influenza pandemic, that their lack of control over health care had devastating consequences.<sup>8</sup> At the same time, Indigenous Peoples in the Arctic have shown their ability to cope with epidemics. For example, to avoid the spread of smallpox in the 18th century, the Saami relied on their nomadic traditions and their cultural perception of the disease—women avoided marrying men with smallpox scars—thereby exercising health-care self-determination.<sup>9</sup> A battle with tuberculosis



and chronic diseases and infrastructure gaps in Alaska's Native communities prompted the US Government to seek alternative ways to improve public health-care access by gradually transferring health-care delivery to tribal governments and tribal organisations. <sup>10</sup> Self-determination models of Indigenous health governance based on Indigenous control over health-care funding and delivery have shown success in Canada, the USA, Australia, and New Zealand, with emerging evidence of positive effects on health-care access and health outcomes—including hospitalisation rates, alcohol-related injuries, mental health, and infections. <sup>11</sup>

International human rights instruments affirm the right to the "highest attainable standard of physical and mental health" and non-discrimination in this regard. <sup>12,13</sup> The UN Declaration on the Rights of Indigenous Peoples (UNDRIP), the International Labour Organization Indigenous and Tribal Peoples Convention, 1989 (No 169), and the American Declaration on the Rights of Indigenous Peoples specifically affirm the right of Indigenous Peoples to access all health services, <sup>14</sup> including traditional medicine and health practices, and the corresponding and interrelated right to develop and establish programmes for health care and delivery. Importantly, UNDRIP recognises the link between environmental health and the health of Indigenous Peoples.

Alaska illustrates the role of health-care systems managed by Indigenous Peoples in addressing the COVID-19 crisis. The Native health-care system is federally funded and administered by the Alaska Native tribal governments and tribal entities. Contracts are negotiated with non-profit tribal health organisations. The resultant Alaska Tribal Health System covers 200 communities in 12 major tribal health regions and is able to make its own health-care and public health decisions, independent of the state. Nonetheless, a long-established partnership with the state public health authorities provided an opportunity for effective co-management of the COVID-19 response. For example, the Alaska public and tribal health systems created and co-led the Alaska Vaccine Task Force. As a result, the state was responsible for receiving vaccine allocations, whereas local vaccination efforts were under the control of tribal communities that were able to rapidly deploy massive early vaccination efforts, months ahead of the rest of the USA.15

A vaccination campaign co-managed by Indigenous Peoples was probably a determining factor of the lower death rates and lower case–fatality ratios in Alaska than in the USA as a whole, as the campaign provided legitimacy and urgency to vaccinations as well as physically enabling vaccines to be administered to large numbers of residents as early as December, 2020. 15 Tribal authorities were able to establish and implement their own priorities and practices, such as placing emphasis on protecting their Elders and implementing culturally appropriate COVID-19 education programming. Other health-care systems in the Arctic with substantial control by Indigenous Peoples include those in Canada and Greenland, which have shown similar outcomes to that of Alaska in the COVID-19 pandemic. 27

Indigenous Peoples' authority, particularly health-care sovereignty, is a key factor of resilience to the COVID-19 pandemic and future health crises. Recognising, respecting, and promoting Indigenous Peoples' selfdetermination and sovereignty is a crucial objective for developing and maintaining sustainable health-care systems. As underscored by Inuit Tapiriit Kanatami in Canada, 16 evidence-based responses—specific to and led by Indigenous Peoples—are most beneficial for combating pandemics. A shift towards healthcare system co-management, emphasis on a One Health approach, and recognition of the capacity and institutions of Indigenous Peoples are key directions to prepare Indigenous communities for future pandemics in the Arctic and around the world. This path could have substantial barriers, including the lack of recognition of Indigenous rights and sovereignty, unwillingness of the nation states to commit funds, and persistent shortage of infrastructure and human resources in Indigenous communities. To be truly successful, such efforts must translate to addressing the long-standing health and wellbeing gaps and their compounding factors in Arctic Indigenous homelands.3 These longterm measures should also be based on Indigenous health-care sovereignty. Overall, non-discrimination, decolonisation, and Indigenisation of health care is the most effective and efficient way to address potential pandemic-like health emergencies, and should be considered a top priority in further enhancing public health services throughout Indigenous homelands around the world.

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## Comment

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- Arctic Center. COVID-19 confirmed cases in the Arctic. https://arctic.uni. edu/arctic-covid-19 (accessed March 4, 2023).
- Tiwari S. Petrov AN. Devlin M. et al. The second year of pandemic in the Arctic: examining spatiotemporal dynamics of the COVID-19 "delta wave" in Arctic regions in 2021. Int J Circumpolar Health 2022; 81: 2109562.
- Adams LV, Dorough DS, Adams LV, et al. Accelerating Indigenous health and wellbeing: the Lancet Commission on Arctic and Northern Health. Lancet 2022; 399: 613-14.
- Hathaway ED. American Indian and Alaska Native People: social vulnerability and COVID-19. J Rural Health 2021; 37: 256-59.
- Huot S, Ho H, Ko A, et al. Identifying barriers to healthcare delivery and access in the Circumpolar North: important insights for health professionals. Int J Circumpolar Health 2019; 78: 1571385.
- Petrov AN, Welford M, Golosov N, et al, Lessons on COVID-19 from Indigenous and remote communities of the Arctic. Nat Med 2021; 27: 1491-92.
- Pickering K, Galappaththi EK, Ford JD, et al. Indigenous Peoples and the COVID-19 pandemic: a systematic scoping review. Environ Res Lett 2023; **18:** 033001.
- Napoleon H. Yuuyaraq: the way of the human being. Fairbanks, AK: Centre for Cross-Cultural Studies, University of Alaska Fairbanks, 1991.

- Sköld P. Escape from catastrophe: the Saami's experience with smallpox in eighteenth-and early-nineteenth-century Sweden. Soc Sci Hist 1997;
- 10 Alaska Native Tribal Health Consortium. Our health in our hands: the path to tribally managed health care in Alaska: 1950s to today. 2020. https:// www.anthc.org/wp-content/uploads/2021/01/Our-health-in-our-hands. pdf (accessed March 4, 2023)
- National Collaborating Centre for Indigenous Health. Supporting Indigenous self-determination in health: lessons learned from a review of best practices in health governance in Canada and internationally. December, 2020. https:// www.nccih.ca/495/Supporting\_Indigenous\_self-determination\_in\_health\_ Lessons\_learned\_from\_a\_review\_of\_best\_practices\_in\_health\_governance\_ in\_Canada\_and\_Internationally.nccih?id=317 (accessed March 4, 2023).
- UN. The international covenant on economic, social and cultural rights. article 12. Dec 16, 1966. https://www.ohchr.org/en/instrumentsmechanisms/instruments/international-coven ant-economic-social-and-economic-social-acultural-rights (accessed March 4, 2023)
- UN. Convention on the elimination of all forms of racial discrimination, article 5(e)(iv). Dec 21, 1965. https://www.ohchr.org/en/instrumentsmechanisms/instruments/international-convention-elimination-allforms-racial (accessed March 4, 2023)
- 14 UN. United Nations declaration on the rights of Indigenous Peoples. Sept 13, 2007. https://www.ohchr.org/en/indigenous-peoples/undeclaration-rights-indigenous-peoples (accessed March 4, 2023).
- Chhean E, DelFavero M, Thoumi A, Tewarson H, Haldar S, Hockenberry S. A case study of Alaska's state and tribal nation partnerships for COVID-19 vaccination. National Academy of State Health Policy, Duke-Margolis Center for Health Policy, National Governors Association Center for Best Practices. August, 2021. https://www.nga.org/wp-content/uploads/2021/08/Alaska\_ Covid\_Case\_Study\_Aug2021.pdf (accessed March 4, 2023).
- Inuit Tapiriit Kanatami. The potential impacts of COVID-19 on Inuit Nunangat. June, 2020. https://www.itk.ca/wp-content/uploads/2020/06/  $itk\_the-potential-impacts-of-covid-19-on-inuit-nunang at\_english.pdf$ (accessed March 4, 2023).



## (IV) US abortion bans violate patients' right to information and to health

Published Online April 25, 2023 https://doi.org/10.1016/ 50140-6736(23)00808-5 Long-standing efforts to eviscerate the federal constitutional right to abortion in the USA culminated in June, 2022, with the US Supreme Court's Dobbs v Jackson Women's Health Organization decision to overturn Roe v Wade and almost 50 years of precedent protecting the right to abortion. The USA is now one of only four countries that has removed legal grounds for abortion since 1994, joining El Salvador, Nicaragua, and Poland.<sup>1</sup>

12 US states now entirely or nearly ban abortion with narrow and ambiguously defined exceptions that do not reflect accurate medical terminology, allowing physicians' decisions to easily be challenged.2 Health professionals who violate the bans could face criminal and civil penalties.2 Four of these states (Arkansas, Oklahoma, South Dakota, and Texas) have adopted civil and criminal laws that only include exceptions related to saving the life of the mother. Some states, such as Oklahoma, have multiple bans with inconsistent exceptions.2 Clinicians in states where abortion is criminalised are placed in a situation of dual loyalty and must navigate inconsistent and punitive state laws while trying to uphold their ethical duty to provide patient-centred care.3 The risk of prison sentences, fines, and loss of medical licensure has created a chilling effect on abortion care, even for patients facing potentially life-threatening medical emergencies.4 This dual loyalty has already translated into harm for patients in states where abortion is criminalised. There are some documented cases of pregnant patients who suffered trauma or nearly died because clinicians delayed or denied care due to concerns about violating abortion bans.5-7

Individual obstetric hospitals are left to determine what guidelines, processes, or legal support, if any, they will institute for clinicians, and the extent to which pregnant people's preferences and tolerance for risk can be taken into account in such decision making. In these states, pregnant people can encounter different situations