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Native
Health

ARCTIC NUTRITION AND GENOCIDE

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Accelerated native land claims settlements and development in the U.S. and Canadian Arctic are changing Inuit life at a pace and to an extent some observers have called genocidal. Although recent trends in the north may not satisfy strictly the accepted definition of genocide under international law, they certainly fall within its shadow, because the overall health of Inuit has deteriorated and is likely to grow worse. Whatever their real intent, northern claims settlements and development are killing people.

"Genocide"

The 1948 Convention on the Prevention and Punishment of the Crime of Genocide condemns, inter alia, "deliberately inflicting on [a national, ethnical, racial or religious] group conditions of life calculated to bring about its physical destruction in whole or in part," with "intent to destroy" the group.[1] The key words are "deliberately" and "intent." A program that indisputably has the effect of undermining a particular group's health, may have been designed for another, innocent purpose. But innocent origins does not necessarily constitute a defense.

An analogy may be drawn to the "Nuremburg Principle": acting under superior orders is no defense to crimes against humanity.[2] While clerks executing a genocidal plan may not originally intend anything except obedience to orders, they must realize, eventually, what are the natural and unavoidable consequences of their actions, and therefore must be considered culpable if they continue. By the same reasoning, a government must be held responsible if it persists in a policy once its unintended consequences have been recognized.

In the Arctic context, a question also arises because health problems have developed as a result of both acts and omissions; the Convention speaks of "inflicting" rather than failing to intervene.

The United Nations' special rapporteur appointed to reevaluate the Convention in 1983 suggested amending it to deal expressly with the case of "calculated neglect," for instance deliberately failing to deliver food aid to a starving region.[3]

A distinction should be made between requiring governments to spend more money on food or health care, however, and requiring them to put an end to catastrophic, albeit innocently-conceived programs. The first would be rather novel, and probably is outside the scope of the existing Convention. Human problems can be alleviated but rarely can they be eliminated. At what point would a government have done enough to avoid liability? The line between action and omission is not always clear, however. If Brazil fails to prevent prospectors from settling "Indian Parks" we may suspect, at least, that it intended the consequences.

Evidence for the negative consequences of northern development on Inuit health has accumulated to the point that failure to change government policy can properly be considered genocide. This is not a matter of "calculated neglect," because the conditions involved--landlessness, centralization, diminished harvesting rights and loss of wildlife habitat due to mining, hydro construction and icebreaking--all result directly from government programs, even if they are often conducted by private enterprise under government licenses.

Changes in Arctic life

Since the 1950s, Arctic life has changed in ways that affect Inuit diet and nutrition significantly. Development, demographic changes associated with development, and corresponding changes in conservation regulations have reduced the number, distribution and availability of wildlife, aggravating the geographic restriction of harvesting rights under land claims settlements. The proportion of "country food" in Inuit diets consequently has been declining for at least thirty years.[4] Over the same period there has been a marked decline in Inuit general health and fitness due to more sedentary lifestyles as well as poorer nutrition.[5]

Inuit historically utilized nearly all of the Arctic, and very probably harvested close to the maximum sustainable yield of seals

and caribou.[6] Population levels accordingly remained relatively constant.[7] Any reduction in hunting area, wildlife stocks, or access to hunting must be matched by a reduction of population or with compensating food imports. Similarly, any population growth resulting from improved medical care, more consistent or abundant (albeit less nutritious) food supplies, or immigration will strain available resources, leading to poorer overall health and requiring increased government aid for minimal nutritional maintenance.

Although settlements formed around whaling stations, missions, and, in the 1920s and 1930s, Hudson's Bay Co. stores, most Inuit lived in camp until the 1950s when the combination of new schools, clinics, and D.E.W.-Line construction opportunities made town life both attractive and economically feasible.[8] When the employment boom ended in the early 1960s, snowmobiles financed by high sealskin prices made it possible for townsmen to maintain traditional hunting patterns over greater distances.[9] Public employment and rotating mining work has helped maintain this new demography,[10] and until 1983, at least, there was little change in the geographical areas regularly foraged in the Northwest Territories.[11]

Hydro and mining projects first began to threaten Arctic life in 1949, when a consortium of U.S. steelmakers formed the Iron Ore Company of Canada to develop Labrador's orefields. Most prospects in the Schefferville-Wabush area were leased by 1964, and in 1967-1974 Brinco, a subsidiary of Rio Tinto Zinc (U.K.), constructed one of the world's largest hydro systems at Churchill Falls, Labrador. Growing U.S. interest in the petroleum potential of Alaska's North Slope meanwhile led to the 1971 Alaska Native Claims Settlement Act,[12] and Canadian hydro needs to the James Bay-Northern Quebec Agreement.[13] Over the past decade, hard-rock mining and offshore oil sites have been leased throughout the Arctic, in many instances disregarding outstanding aboriginal claims.[14]

Hydro projects inundate considerable areas and unavoidably reduce the range available for caribou and other terrestrial food animals.[15] The environmental effects of other projects are less obvious and poorly understood. The Alyeska pipeline may act as a barrier to caribou migrations, and in any event has threatened the

herds by improving access to their range.[16] Ice-breaking by ore ships, tankers and supply barges may kill numbers of ice-breeding mammals such as ringed seals,[17] and may also drive seals away from traffic routes.[18] Ice-breaking clearly disrupts ice travel by dog sled or snowmobile,[19] potentially disrupting over-ice migrations of caribou as well. Lead/zinc ores and uranium, associated with toxic byproducts such as arsenides, mercury, and radon, dominate Arctic mining.[20]

Development projects "consume" land and wildlife directly, and also trigger lopsided claims-settlement agreements. Alaska Natives and Quebec Crees got to keep about 15 per cent of their aboriginal territories--far short of what was needed to survive by hunting.[21] Settlements also legitimize federal, state and provincial conservation regulations, which grow tighter as Euro settlement, attracted by development projects, places greater hunting pressure on stocks already weakened by development itself. Alaskan Inuit have been forced to reduce bowhead whale, walrus and caribou hunting,[22] and Canadian Inuit have had to cope with quotas on muskoxen, narwhal, beluga and polar bears.[23]

In addition to area limitations and quotas, contemporary Inuit must contend with rising hunting costs also due, indirectly, to the demography of northern development. Centralization and resettlement increased the distances hunters must travel to find game. Although technology provided a solution, snowmobiles tripled hunters' cash requirements.[24] Hunters now depend on a mix of wildlife-product sales, wages and social assistance to stay in business.[25] At the same time, southerners' concern for wildlife conservation is eroding fur, ivory and leather markets. The 1972 Marine Mammal Protection Act closed U.S. markets to Canadian Inuit sealskin, ivory and whale bone handicrafts, and in 1983 western European sealskin markets collapsed after a decade of public protests directed, ironically, not at Inuit but at Euro-Canadian and Norwegian sealers.[26]

It is doubtful whether many Inuit can still afford to harvest any significant amount of country food without government aid. The number of Inuit hunting in the Northwest Territories has fallen by more than half in just the past few years.[27] Cash subsidies for

hunting equipment and fuel will do little good over the long run, however, if Arctic development continues to increase demographic pressures and reduce the numbers, distribution and availability of wildlife.

Dietary adaptations

Country diets are almost entirely carnivorous, with only small amounts of berries and herbs in the more southerly settlements. By comparison, carbohydrates dominate imported foods due to the high cost of transporting and storing perishable fresh meats, fruits and vegetables. Sugar, flour and vegetable oils cost twice as much in the north, but fresh vegetables, including potatoes, can cost ten to twenty times more in northern stores.[28] Ready-to-eat foods tend to be popular because they are consistent with traditional, informal meal patterns, but introduce a variety of salts and preservatives to the diet, as well as additional sugar.

Dietary changes are essentially economic. A hunter can equip himself for about \$2,000-\$4,000 yearly if, in today's depressed fur and skin markets, he can raise that sum. Replacing 800-1000 kg of country meat with imported frozen meats would cost at least \$6,000, with some loss of nutritional value. Purchasing a nutritionally equivalent diet for his family that includes meats, vegetables and fruits could cost him \$10,000 or more. Thus if sufficient cash is available, hunting is economically and nutritionally efficient. If hunting equipment cannot be afforded, neither can the hunter afford a comparable diet of imports. His family must shift from fresh meat to breads, biscuits, some frozen meat, margarine and sugar.

Replacing fresh seal and caribou meat with imported ground beef and pork increases both total fat, and the proportion of saturated fat in the diet. Eaten without the blubber, for example, seal flesh is about half as fatty as beef, and seal fat, like the fats and oils of other marine mammals and fish, is predominantly unsaturated.[29] Inuit eating a seal diet store these unsaturated fats without modification, while those eating a typical mixed southern diet store saturated animal fats and synthesize other saturated storage fats from carbohydrates.[30] Heavy saturated-fat loads are definitely a risk factor in cardiovascular disease.[31]

Shifting to a carbohydrate-rich diet also means deriving most metabolic energy from the breakdown of complex sugars and glucose, rather than amino acids and ketones from protein.[32] Carbohydrates have much greater caloric density (calories per gram) than protein and can be metabolized more efficiently without producing heavy urea loads, but they also metabolize more quickly, and most surplus is stored as saturated fat. This affects activity levels and thermal regulation. A meal rich in simple sugars results in a brief but acute "high," followed by a hypoglycemic depression and reduced body temperature until the next meal. Slow-metabolizing protein and fats level out the body's energy and temperature.

Imported meats and carbohydrates are relatively poor in iron, B vitamins, vitamin A and potassium compared to seal and caribou.[33] To some extent imported diets compensate for this by introducing new sources of vitamin C and calcium. Blubbers contain an abundance of the fat-soluble vitamins A and D, the flesh of seals and caribou is rich in B vitamins, but barely-adequate amounts of vitamin C can be derived from seal liver and muktuk.[34] If Inuit eat less country meat, they must compensate with the vitamin-C-enriched drinks which, happily, are readily available, relatively inexpensive and popular. Calcium, traditionally obtained by chewing fish bones and the bones of young seals, is also readily and relatively cheaply available in imported dairy products.[35]

Dietary sensitivities

Inuit and southerners have different dietary requirements and tolerances, chiefly affecting the metabolism of iron, calcium, and certain sugars. Flooded with dietary iron from marine mammals, for instance, Inuit have been able to survive with significantly lower iron-absorption rates.[36] Their dietary iron requirements are consequently much higher, on average, and this can become a problem if they shift to relatively iron-poor domesticated meats or to carbohydrates. Similarly, Inuit have been able to survive without the enzymes for metabolizing the sugars in milk (lactose) and fruits (sucrose). For most Inuit, drinking more than one cup of milk at a time can result in discomfort, and many cannot tolerate even small

portions of cake or candy.[37] This limits their ability to obtain adequate calcium from an imported diet--and their ability to fall back on a poverty diet of cheap sugars.

Calcium metabolism is a more complex problem. Country meats are high in phosphorus, magnesium and amino acids, all of which inhibit the mineralization of bone.[38] Although Inuit appear to have compensated by utilizing dietary calcium more efficiently than southern populations, they have always suffered more rapid bone loss with advancing age (osteoporosis).[39] Thicker-boned than Europeans, Inuit suffer somewhat less from this condition, at least in middle age, but it will become a growing concern as lifespans increase. Increased dietary calcium, from conscientious supplementation as well as limited use of dairy products, will almost certainly be necessary in the future.

Clinical issues

Over the past thirty years, Inuit have developed a number of health problems related chiefly to increased consumption of sugars and saturated fats. Problems are most severe in the larger towns where a greater proportion of the diet is imported, and among Inuit born after the onset of town living in the 1950s.[40] Poor housing and sanitation leave Inuit generally more susceptible to infectious and contagious diseases, and tend to aggravate nutrition-related health problems.[41] Children are at greatest risk because they consume a greater proportion of imported food than adults,[42]

More obvious manifestations of sugary imported diets include dental caries, obesity, and acne. All were virtually absent thirty years ago, but have now reached epidemic proportions among young Inuit.[43] An increase in adult-onset diabetes is also anticipated based on experience with Indian populations farther south.[44] A more insidious incident of sugary diets is periodic hypoglycemia, resulting in between-meals lethargy, depression, and inability to stay warm. The prevalence of this condition is suggested by the fact that Inuit readily identify it with imported foods and advise eating country meats as therapy.

Serum cholesterol levels have increased threefold among Inuit since the 1950s, associated with increased cardiovascular disease

and high blood pressure.[45] Calcium deficiency is an additional cardiovascular risk factor,[46] hence Inuit are particularly likely to suffer from high proportions of saturated fats in imported food. Obesity is another cardiovascular risk factor, and salty processed foods contribute to high blood pressure. Rising cholesterol levels may also explain the growing problem of gallbladder disease among Inuit women.[47]

The most devastating Inuit health problem associated with diet may be anemia, particularly in women and children. Inuit dietary iron requirements are high, and the iron content of imported foods, including domestic meats when they can be afforded, are relatively low. Town-living Inuit children are frequently anemic, and this has been associated with learning disabilities.[48] Anemia among Inuit is unusually intractable due to their low rate of iron absorption. Experimental iron supplementation programs resulted in diarrhoea among Inuit infants without reducing anemia.[49]

In developing countries, even a subclinical deficiency of Vitamin A has been associated with 4 to 12 times greater childhood mortality from respiratory and gastro-intestinal diseases.[50] It is suspected that Vitamin A plays an important role in the keratinization of lung and gut tissues, which increases their resistance to infection. Inuit dietary requirements for Vitamin A may moreover be high, like their requirements for dietary iron, owing to adaptation to exceptionally high concentrations of these nutrients in the traditional diet.

Certain forms of cancer may be related to diet, but while some cancers have increased recently among Inuit,[51] no causal relations have yet been established clinically. Imported diets are relatively low in fibre, however, increasing the risk of digestive complaints, constipation and, in theory, gastrointestinal and colon cancer. In addition, exposure to a growing variety of food additives, solvents and industrial chemicals has almost certainly increased cancer risk in the north. Further study is warranted, especially since cancer susceptibilities vary among ethnic groups.

Evaluation

Three conclusions can be drawn from available data. The proportion of imported foods in Inuit diets has been increasing since the 1950s, at least in part because of centralization and decreased hunting opportunities. Affordable imported foods are relatively rich in saturated fats and sugar, and poor in vitamins and iron. Clinically-observed results of this changing diet include greater risk of death from cardiovascular disease, chronic childhood anemia associated with learning disabilities, and reduced function due to periodic episodes of hypoglycemia. Physicians can maintain and even extend physical life notwithstanding these conditions, but not the quality of life.

Declining Inuit health is avoidable. Some measure of control lies with Inuit themselves, by avoiding the temptation to rely on readily-available convenience foods, and investing cash income in hunting. No degree of Inuit commitment will succeed, however, if hunting opportunities continue to disappear due to land settlements, development projects, demographic growth and wildlife regulations. To this extent, government is responsible for the problem and can legislate the solution. Failure to respond by protecting Arctic subsistence activities from further encroachments would condemn Inuit, consciously, to ill-health and death. If that falls short of the legal definition of genocide, it is not by much.

NOTES

1. Article II(d) of the Convention. General Assembly Resolution 260 A (III) of 9 December 1948. The Convention went into force in 1951. Canada has ratified it; the U.S. has signed it and is currently considering ratification.
2. "The fact that the defendant acted pursuant to order of his Government or of a superior shall not free him from responsibility, but may be considered in mitigation of punishment." Article 8, Charter of the International Military Tribunal, reproduced in 1 Trial of the Major War Criminals before the International Military Tribunal (Nuremberg, 1947); discussed in Report of the International Law Commission, Second Session (1950).
3. B. Whitaker, "Revised and updated report of the question of the prevention and punishment of the crime of genocide," U.N. Doc. E/CN.4/Sub.2.1985/6 (2 July 1985), ¶¶40-41.
4. Kruse 1984.
5. Rode and Shephard 1984a, 1984b.
6. The geographic extent of recent Inuit use is shown in Freeman 1976. The size of ringed seal stocks is only approximately known, but it is believed contemporary harvesting may just equal or possibly exceed maximum sustainable yield. Finley et al. 1983.
7. Hamelin 1979. Disease probably caused a significant decrease in the late 19th century, and there has been some increase since the 1950s.
8. Duhaime 1985; Kruse 1984.

9. Freeman 1982; Wenzel 1981; Smith 1973.
10. Wenzel 1983; Kruse 1982.
11. Freeman 1982.
12. Barsh 1982; Arnold 1978; Berry 1975.
13. Whyte 1982.
14. Department of Indian and Northern Affairs 1982; Brown 1984.
15. See, e.g., Usher 1982.
16. Strong 1977; Bergerud, Jakimchuk and Carruthers 1985.
17. Boles, Jackson and Mackey 1984.
18. Mansfield 1983; Smith and Hammill 1981.
19. Boles, Jackson and Mackey 1984. Some plans for development of Arctic oilfields envisage traffic levels of several tankers per day. Mansfield 1983.
20. Department of Energy, Mines and Resources 1980. Hyvarinen and Sipila 1984 related heavy metal loads to seal pup mortality. There is also reason to fear oiling of seals from a rig blowout or tanker spill. Engelhardt 1983.
21. Barsh 1982; Whyte 1982; Berger 1977. Area restrictions have been compounded by disputes over wildlife regulations. Makivik 1985.
22. Langdon 1984.
23. Bennett 1982.

24. Wenzel 1978; Riewe 1977.
25. Cox 1985.
26. Cournoyea 1985; Wenzel 1983; Wenzel 1978.
27. Cournoyea 1985.
28. Department of Indian and Northern Affairs 1984; Mackey 1981.
29. Schaefer and Steckle 1980; Hoppner et al. 1978; Draper 1977.
30. Draper 1977; Dyerberg, Bang and Hjerne 1975.
31. Kromhout, Bosschieter and Coulander 1985; Anonymous 1984.
32. Schaefer and Steckle 1980; Draper et al. 1979; Draper 1977.
33. Boles, Jackson and Mackey 1984; Schaefer and Steckle 1980; Draper et al. 1979; Draper 1977; Hoppner et al. 1978.
34. Schaefer and Steckle 1980; Geraci and Smith 1979. Vitamin C is also available in caribou rumen.
35. Draper et al. 1979; Draper 1977.
36. Schaefer and Steckle 1980; Draper et al. 1979; Hoppner et al. 1978.
37. Schaefer and Steckle 1980; Draper et al. 1979; Draper 1977. There is no report of Inuit sensitivity to fructose, as opposed to sucrose ("cane" sugar).
38. Jeppesen, Blach and Harvald 1984; Draper et al. 1979.
39. Schaefer and Steckle 1980; Fraser 1975. According to Harper,

Laughlin and Mazess 1984, Inuit women may lose bone 39 per cent faster than white American women. Increased consumption of salt and tea can aggravate calcuria. Goulding et al. 1983; Fassett 1973.

40. Schaefer et al. 1980.

41. Rode and Shephard 1984a, 1984b; Mackey 1981; Schaefer et al. 1980. Bottlefeeding infants further reduces their resistance to infectious disease. Schaefer et al. 1980; Schaefer and Steckle 1980; Baxter 1981.

42. Draper et al. 1979; Schaefer 1975.

43. Mackey 1981; Schaefer et al. 1980; Schaefer and Steckle 1980; Draper et al. 1979; Mayhall 1975. The prevalence of dental caries is hardly surprising now that Inuit consume, on average, even more sugar than southern Canadians. Schaefer and Steckle 1980.

44. Schaefer and Steckle 1980; Draper et al. 1979.

45. Schaefer et al. 1980; Schaefer and Steckle 1980; Draper 1977.

46. Hines et al. 1985.

47. Schaefer et al. 1980; Schaefer and Steckle 1980. Eating more domestic meats and less seal also reduces vitamin A intake. Inuit are now falling below dietary standards for this vitamin, but there has been no evaluation of the clinical consequences. Schaefer et al. 1980; Murray 1975.

48. Pollitt et al. 1985; Schaefer and Steckle 1980; Draper et al. 1979; Hamilton 1975; Bender et al. 1975. Learning disabilities may also be associated with diets low in vitamin C and high in protein, e.g., replacing seal and muktuk with frozen beef. Scriver and Clow 1975.

49. Schaefer et al. 1980.

50. Sommer, Katz and Tarwotjo 1984; Sommer 1983.

51. Hildes and Schaefer 1984.

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