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Commentary: Indigenous peoples' food and environment

Here is the good news



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Editor's note

This is the first in an occasional series of *World Nutrition* 'Special commentaries' in which we reprint and update some of the contributions of which we are most proud and which have been most widely admired. Harriet Kuhnlein's commentary here is also in memory of her colleagues Lois Englberger, who died in 2011, and Elizabeth Chinwe Okeke, who died in 2012. They made vitally important contributions to the work summarised here.

Introduction



This picture, of an Inuit girl and her friend in Pangnirtung, Nunavut, Northern Canada, for me shows what public health nutrition is all about. For me and the team I have been proud and privileged to work with over 30 years at CINE at McGill University, good nutrition is simply part of the good life well led.

It's more than this, too. The work we do at CINE is with the 'original peoples' or 'First Nations': ancient populations and indigenous communities. CINE has this focus for a number of reasons. People who, as we would say 'live close to nature', do not make the distinctions most 'civilised' people make, between the living and the dead, between humans and other living things, or between the living and natural environment. They see food differently from most of us with formal training in biology. For them, their food systems and diets are part of their ways of life, and have profound philosophical, cultural and social significance. Foreign 'experts' may do great damage, by telling them to conform to modern dietary and medical guidelines. If they accept such advice they may be less likely to suffer some nutrient deficiencies, but they are also likely to lose the sense of meaning and harmony of their lives in the cultural ecosystems within their communities, which is, I believe, more serious.

It's even more than this. A large number of Association members are associated with *The New Nutrition project*, which recognises that nutrition is a social, economic and environmental as well as a biological science. I agree with this view, and the people I work with don't need to be told something so obvious. One New Nutrition principle relevant to my work is that 'Food and nutrition practices constantly followed in different cultures in history are probably valid – though not necessarily for the reasons given. They do not require proof to be accepted, but disproof to be rejected'.

My inclination, and that of very many colleagues, is to have confidence that pre-industrial peoples know what they are doing, and also in many ways they not only know what is best for them better than we do, but also have much to teach us, if we are prepared to pay respectful attention.

WN editor Geoffrey Cannon has an example of this. In Brazil, where he lives and works, there are impoverished regions where vitamin A deficiency remains a public health problem. The usual approach is by use of capsules containing massive doses of vitamin A. But in these very regions there are indigenous trees and bushes whose fruits – *buriti*, *pequi*, and others – are intensely rich in carotenoids. The point here, is that it must be certain that the original Brazilians, who were either exterminated or driven off these lands, will have known of the qualities of these fruits, and will have cultivated, harvested and eaten them – because people who live in nature without electrical power need to see at night. That is to say, the solution to vitamin A deficiency in Brazil is growing on the trees and bushes, in those areas where children are still now suffering. All that is needed here is for public health nutritionists, agriculturists, and civil society organisations in Brazil to pay attention to what is in front of their eyes.

This commentary is a celebration. I cannot thank enough, the hundreds and thousands of people all over the world who have made rich contributions to CINE's work. In offering this commentary to *WN*, I am inviting all its readers concerned with public health and with nutrition all over the world, to consider that populations and communities with a long history of living in natural ecosystems, and who revere tradition, have knowledge and wisdom which we need to respect and acknowledge.

It's still more than this. I guess that most *WN* readers are, as professionals, parents, friends, and citizens, intensely concerned about our planet's natural biodiversity – the threat to and survival of animals and plants – the fish, birds, mammals, insects, fungi, lichens, algae, trees and shrubs that provide edible meats, fruits, vegetables, seeds, nuts, roots and other parts-– and about our physical environment and the biosphere. So am I. We also need to be intensely concerned about 'other' human communities, who generally remain overlooked, pushed aside, and practically unknown. They do not have seats on the United Nations Security Council, but they do, in my very sincere judgment, understand better how to live on this earth now than do most of us. I hope, in this commentary and in the other work that I share, that I am a steadfast witness.

The good news

As public health nutritionists, we are all working to 'make nutrition better' and 'improve lives' of the people with whom we engage; but all too often we are caught up with the bad news, the perspective that health is about medicine and 'fixing thing'. Then in our enthusiasm we often approach communities (often cross-culturally) in a way that creates the response '…here they come again, wanting us to do this and do that because our children and families are so unhealthy…' Think about it…put yourself in their shoes.

The Centre for Indigenous Peoples' Nutrition and Environment (CINE) based at McGill University in Montreal has been very fortunate to have the participation and guidance over the years of many indigenous leaders, from communities requesting nutrition and health services; individuals who have helped us approach unique and difficult nutrition issues with their communities who have been fighting for hundreds of years to maintain their cultures, including their own food and health systems. The 'mainstream' scientists, often from government offices, are not easily trusted to 'fix' something, especially when these outsiders are deciding what it is that needs fixing

Indigenous Peoples have shared their knowledge and interpretations of health, and these are very much in line with the WHO definition of health as 'a state of complete physical, mental and social well-being'. (For a definition of 'Indigenous Peoples' please see: http://www.un.org/esa/socdev/unpfii/en/sowip.html).

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Key messages

- Be open to the views of the people with whom you are working, especially about their foods.
- Remember that the food people eat touches the mental, emotional and spiritual, as well as the physical, sides of their health.
- Balance messages of risk with messages of benefits about the food people are eating. Good news helps – 'You get more with honey than with vinegar'.
- Indigenous Peoples' food systems are filled with unique and biodiverse foods that are nutritionally rich, socially acceptable, economically sensible, and sustainable.
- A good participatory approach to community research is essential for success – start with some good news.

Thus, public health scientists, especially public health nutritionists, are implored to be open to new ideas and unique ways of interpreting health from the mental, physical, emotional and spiritual sides – all at the same time—and the need for balance in considering the benefits of indigenous wellness activities with the risks faced from health threats.

It was during my doctoral studies with the Hopi in Arizona that I became convinced that the good news about traditional food needs to be used to build health promotion activities. I found that the traditional whole grain blue maize and ash Hopi bread was extremely rich in nutrients, while the use of traditional maize foods was becoming less frequent at the same time that diabetes was rapidly increasing. So I visited the local Indian Health service physician to ask about how to better promote the excellent traditional Hopi foods. My request was met with stony amazement. He said that the worst thing for diabetes was to eat these awful traditional foods that are so full of carbohydrates. It was then I realised that traditional foods of Indigenous Peoples needed to be documented and the information on their many nutritional and wellness benefits shared widely.

In this commentary, as you see, I have given pride of place to brief stories of the Indigenous Peoples with whom we at CINE work. The stories are, after all, theirs. I have also begun with some 'take-home' bullet points. Much more information is available at our website: *www.mcgill.ca/CINE*.

Inuit, Nunavut, Canada

- Nutritional benefits of local Inuit foods outweigh the risks of contaminants in these foods throughout the Canadian Arctic.
- Diets containing one or more items of traditional food were superior in nutrient content than diets without any traditional foods. Similar research findings were shown for other Canadian Indigenous Peoples .
- Sea mammal fats are excellent sources of fat-soluble vitamins, including retinol, tocopherol, and cholecalciferol (vitamins A, E and D).



Ice fishing, seal, and narwhal muktuk (blubber) in Nunavut, Arctic Canada

CINE has contributed a great deal of research with Inuit and First Nations People in Northern Canada since the mid-1980s. Several community leaders have engaged with CINE during this period, representing the Dene Nation, Yukon First Nations and the Inuit of the Inuvialuit Settlement Region, Nunavut and Labrador. CINE/McGill based professors conducting this research are Olivier Receveur (epidemiologist) and Laurie Chan (toxicologist), and Grace Egeland (epidemiologist) who leads the International Polar Year projects with Inuit and including Looee Okalik as community leader partner. Over 50 rural and remote communities have participated with these efforts.

It was recognised early on that the nutritional benefits of local Inuit foods far outweigh the risks of contaminants in these foods that originate from industrial activities in the South and carried into the Arctic in air and ocean currents. In fact, diets containing one or more items of traditional food were superior in nutrient content than diets without any traditional foods, being comprised solely of

purchased foods. This finding was demonstrated for all the three cultural groups across the Canadian North.

Food composition research conducted at CINE demonstrated the excellent sources of nutrients found in wildlife animal and plant foods. In particular, sea mammals such as seal and narwhal, shown here, are excellent sources of fat-soluble vitamins, including retinol, tocopherol, and cholecalciferol (vitamins A, E and D).

Intervention activities based in the local food system are currently hampered by concerns for climate change, thinning ice, and difficulties conducting traditional harvesting practices. Nevertheless, there has been success in education efforts where stories of elders are recorded and transmitted with innovative media to youth through school programmes and the local youth council. Several graduate students have been involved in these efforts.

Some think this type of work with Indigenous Peoples is steeped in the 'romantic' notion that we need to return to the past to solve the world's problems. Of course this is not the case. Rather, we need to avoid scientific imperialism and to be challenged to find the inherent values of diverse approaches to human sustenance, often in extreme and harsh environments, that are provided by people living close to nature with historical ties to their ancestors' knowledge of linking their living with nature with culture. Further, if we are serious about improving public health nutrition for Indigenous Peoples, who are among the poorest and most in need of health services, then the benefits of existing (pre-intervention) circumstances must be recognised, reinforced and maximised in development strategies while new therapies and helpful behaviours are introduced.

Derrick and Patrice Jelliffe long ago called our attention to the problems in Africa caused by trying to feed babies 'the modern way' which resulted in 'commerciogenic malnutrition'(1). Their advice to public health nutritionists was to support the positive local beliefs and practices that are known to be good, to ignore the practices that you are unsure about, and to try to change only those practices that cause outright harm to children. Today the benefits of breastfeeding are universally recognized, but we are in the midst of controversies on the 'best' complementary food and feeding practices for infants and young children (local or industrially produced and imported food? revised parental feeding strategies?).

Pohnpei, Micronesia

- The islands of the Federated States of Micronesia are rich in the biodiversity of local foods. More than 380 species/varieties/cultivars of local foods are documented.
- Many varieties/cultivars and subspecies of taro, yams, breadfruit, banana, and pandanus are found in Pohnpei with excellent sources of many nutrients.
- The Island Food Community of Pohnpei works closely with many branches of state and national government, NGOs and foundations to promote local foods.
- Several other Pacific nations have requested similar local food programmes.



Woman and baby with Karat banana, a healthy complementary food very rich in carotene. This photograph taken by Lois Englberger was used for a national postage stamp in the Federated States of Micronesia.

The Pohnpei project is located in Pohnpei State of the Federated States of Micronesia (FSM), approximately on the equator in the western Pacific Ocean. The Island Food Community of Pohnpei (IFCP) is an NGO that has worked with CINE for approximately six years. While many community leaders are involved in the project, the IFCP community leader is Adelino Lorens and the academic partner based with

IFCP has been Dr. Lois Englberger (who died in 2011). More than 380 food species/ varieties/cultivars are documented in Pohnpei, and serve as the

foundation of intervention activities to improve health emphasising the local food system.

In particular, varieties/cultivars and subspecies of taro, yams, breadfruit, banana, and pandanus are unique foods found in Pohnpei which are excellent sources of many nutrients. The IFCP works closely with many branches of state and national government, NGOs, and foundations to secure the resources to promote local foods.

The project evolved through concerns about the recent nutrition transition, and that overweight or obesity (which affect 70% of women and 60% of men) and vitamin A deficiency among children, were documented simultaneously with concerns that people were changing their ways of life and using less of their local foods.

The project has included a wealth of activities: workshops, billboards, media messages including email, print, DVDs, radio and TV, activities in schools at all levels, etc. CINE/McGill graduate student Laura Kaufer conducted an assessment of impact of the IFCP activities in the community of Mand, Pohnpei. The photo included here was used as a national postage stamp sent by FSM citizens all over the world. A good example of the project's success is that the other states of the FSM and several Pacific nations have requested similar local food programmes.

The documentation of benefits and risks of pre-mastication of infant foods (2, 3) and potential promotion of this practice is a current controversy worthy of attention and reflection on the evidence. In CINE's work with indigenous communities in developing areas we encounter many cultures that practice pre-mastication of high quality animal and plant foods for young children. We've also learned that public health professionals in these areas often discourage this practice as 'unhygienic', giving women the impression that they just need to be taught how to feed their babies 'properly' (as defined by the outsiders).

Indigenous Peoples in their rural homelands are the source of great wealth of information on biodiversity of food species and practices that support good health. This news is welcomed in our modern world with international cuisines, 'Slow Food' celebrations, and delight in unique fruits and vegetables transported at great cost from around the world. At the same time, concerns for the nutrition transition and obesogenic environments of children in both developed and developing countries command attention. David Kessler's challenge to the food industry to curb the sweet, salt and fat imperatives to appetites, has resulted in the need (and success!) of the Jamie Oliver Food Revolution in the British and North American schools and public consciousness (4). Thus has masterfully demonstrated the power of the intermittent positive 'good news' approach in the midst of appalling statistics on obesity and health.

Dalit, Andhra Pradesh, India

- The traditional Dalit food systems in the Zaheerabad area, near Hyderabad in the State of Andhra Pradesh, contains more than 320 species/varieties of cereals, pulses, millets, oil seeds, fruits, vegetables, roots, tubers and greens
- This diversity of foods presents a rich supply of micronutrients.
- Many traditional foods are uncultivated and harvested as 'weeds' by women who work as agricultural labourers.
- Many foods are also used for their medicinal properties.



Realising some of the great diversity in whole grains and legumes in the Zaheerabad Dalit food system

This project takes place in the Zaheerabad region of Medak District in the State of Andhra Pradesh in India. This is a semi-arid region near Hyderabad, the State capital city. Rural development activities through the Deccan Development Society (DDS) have taken place for many years with the Dalit (the scheduled caste representing the untouchables) women farmers, most of whom are landless and illiterate. Activities with CINE began with Periyapatna Satheesh, and Buduru Salomeyesudas who helped develop the methodology for documenting traditional food systems (now published at http://www.mcgill.ca/cine/research/global/).

The traditional Dalit food system in this area contains more than 320 species/ varieties of cereals, pulses, millets, oil seeds, fruits, vegetables, roots, tubers and greens, which is a great diversity of plant foods that presents a rich supply of micronutrients. Many traditional foods are either wild or uncultivated 'weeds' harvested by the women who work as agricultural labourers. Scientific documentation of all species and varieties and food composition research has been made through the laboratories at the Indan National Institute of Nutrition, which is in Hyderabad.

The DDS activities in promoting local foods have been broad-reaching, and involve increasing access to land by women farmers, education activities in the community with women's groups and schools, media activities that include training Dalit women in use of media equipment. CINE/McGill graduate student Martina Schmid assisted with evaluating the DDS activities in promoting local foods.

Local knowledge of the Dalit includes the roles that several of the uncultivated crop play as medicines for common ailments, and to improve availability of breastmilk for infants.

Our programmatic work with 12 community areas of Indigenous Peoples (5) reveals an astonishing array of food species – up to 380 different species/varieties/cultivars within a local food system. There are many ways that these unique and biodiverse food systems are nutritionally rich, economically sensible, and sustainable; but the total experience of harvesting and using these foods touches the mental, physical, emotional and spiritual worlds of these communities. It is small wonder that Indigenous Peoples strive to protect the land resources that provide these benefits to daily life, and that the traditional cultural foods are greatly missed upon migration to urban areas.

Sharing the good news of rich biodiversity and exceptional nutrient composition, and information on economically sound and culturally suitable foods in remote areas such as the tropical forests of Kanchanburi, Thailand, the Amazon basin, or Arctic tundra obviously contributes power to trusting relationships and partnerships in the research setting.

Awajún, Perú

- The Awajún have a rich traditional food system available to them in the tropical rain forest of the Amazon area of northern Perú, including over 200 diverse species.
- Women's groups have been active in developing education activities in partnership with the Institute of Nutrition in Lima to improve the health of young children
- Animal source foods are being promoted with fish farms and suri gardens, and a pictorial book of traditional foods is popular in the communities.



Awajún mother and child from the Waiwaim Cocoachi community in Perú

The Awajún are an indigenous group living principally in the tropical rain forest of the Cenepa area of the Department of Amazonas in northern Perú. Changing ecological and cultural conditions have accentuated chronic malnutrition and anemia in young children. The academic partner for this project is Hilary Creed-Kanashiro from the International Institute of Nutrition (IIN) in Lima and the community leader partner is Irma Tuesta who works with the women's groups in the Cenepa River area. Engagement with CINE for a project to promote local foods for health began in six rural communities in 2004.

The food system is primarily subsistence farming, hunting and fishing with very little purchased food being used in the community, although there have been food donations by government or aid organisations. A total of 223 diverse food species/varieties have now been documented for the Awajún, including roots, tubers, birds, fish, green plants and fruits, with the major sources of energy being from cassava and banana. Several identifications of food species were made and food composition data derived for dietary analysis.

The project developed for the Awajún emphasises increasing micronutrient intakes, particularly for children with an emphasis on animal-source foods. Graduate

student Marion Roche participated in the food and health baseline documentation and community health promoters have been trained and guided with assistance from staff at the IIN. A popular book was prepared for each of the participating communities with descriptions and photos of each of their foods. Education on the high nutrient qualities of the local foods, and increasing production of fish (fish farms) and suri (popular and tasty larvae) are part of the intervention activities.

In CINE's work in the Canadian Arctic, our first success was to document the food systems and nutrient components while engaging with research strategies to define organochlorine and heavy metal risks in the local food system. With participation of indigenous leaders to gain strong community support, the participation rates in these studies were exceptionally high, giving credibility to the results and the process. Ultimately, the results confirmed that the nutritional benefits of the local foods far outweighed the contaminant risks (6).

Assessment of the nutritional properties of the diets in the context of recommended intakes also gave welcomed news. By dichotomising 24 hour recalls into days with one or more servings of the Inuit, Dene or Yukon First Nations local foods in contrast to days without any local food, it was possible to assess the nutrient quality of the two types of diets. Consistently, across the three cultures in the vast Canadian Arctic, days with traditional food were significantly higher in macro- and micro-nutrient intakes in all age and gender categories of adults (7).

I encourage all public health nutritionists who are responsible for nutrition activities among rural Indigenous Peoples to seek meaningful experiences in the communities, get to know people, and to be open to the positive nutrition practices that can be found there. Take the time to understand the local beliefs and practices and to use this knowledge as a platform to promote good nutrition and health. This is akin to the 'positive deviance' approach where good local practices are recognized and promoted in the midst of trust and respect (8). With this approach new and helpful essential messages can be transmitted more easily to a more receptive community.

Igbo, Nigeria

- A large project to document the Igbo food system was conducted in four states southern Nigeria.
- Several climatic zones were included which yielded food system data with more than 200 species/varieties, several being good sources of carotenoids.
- Widespread undernutrition was found for young children less than 2 years of age but little concern for children older than 6 years
- Project assistants included several undergraduate and graduate students from the University of Nigeria at Nsukka.



Girl with her proud mother in the Igbo project, Nigeria

The Igbo project has been led by Elizabeth (Chinwe) Okeke (who died in 2012) and her colleagues (Henrietta Ene-Obong, Anthonia Uzuegbunam, Alfred Ozioko, Simon Umeh and Nnaemeka Chukwuone) at the University of Nigeria in Nsukka. To document the traditional Igbo food system two rural communities were randomly selected from four states in southern Nigeria. In each community the local chief was identified for the partnership process.

The Igbo culture area has a diversity of climatic zones including upland plains and the delta of the Niger River, with soil erosion a primary environmental concern. Education is not universal, with limited infrastructure, resulting in only 41 per cent of women aged 15 and older being literate (compared to 58 per cent of men), but recent efforts report 77 per cent enrolment in schools by girls and 84% of boys.

The area is rich in food crops with more than 220 species documented. Yams, cocoyams, cassava, and maize are staple crops, and other food groups including legumes, seeds, nuts, vegetables and wild fruits. Red palm oil is a local indigenous food, that still contributes 70-85% of provitamin A intake. Taxonomic identifications were made and food composition studies undertaken by team members, including women and girls from the communities for food sampling and conducting of focus groups on traditional practices.

Anthropometric data collection found widespread undernutrition in children under 2 years of age, but little or no concern for older children 6 years and older. The nutrition transition among the Igbo is a concern with adults exhibiting obesity. Project leaders are taking steps to develop activities to enhance food security with education and agricultural sustainability of their local foods, along with food processing technology that will help to lighten women's work. Four graduate students and three undergraduate research students participated to date from the University of Nigeria in Nsukka.

Carrying through with positive and helpful messaging in public health nutrition interventions with Indigenous Peoples can be a very rewarding experience (9). One might think that approaches successful with any disadvantaged group would be suitable in a setting of Indigenous Peoples. This may be true some of the time; but here I suggest that efforts such as those noted above are needed to address the circumstances Indigenous Peoples face in rural areas – inaccessibility, need for respect and protection of ecosystems and culture, and often outright discrimination and lack of services. On the other hand, if a programme 'works' in a rural setting of Indigenous Peoples it is very likely that important lessons learned will benefit public health practitioners working with any community of disadvantaged people. There are many 'good news' stories in all public health settings that will bring smiles, and thereby lighten the health promotion agenda.

How to be a participant

It helps greatly to develop a good participatory approach to community research and development activities, by engaging with local community leaders and health personnel to build nutrition activities 'from the bottom up'. The participatory approach to health promotion and development is essential in cross-cultural work. Here are a few key questions (among many possible – this is just a start) that can stimulate your thinking. Following these principles will set the stage for good community relations in research.

Do you have some positive health messages about nutrition and community life?

Does the steering committee represent the grass roots, with each culture represented, so that the issues and views, local beliefs and practices, of all can benefit the project?

Are research findings returned in understandable language at the local level, with input sought in their interpretation?

Is the current project a priority for the community in the midst of their other concerns? Can the research team respond to community requests for assistance to their pressing issues?

Are equitable benefits from the research returned to the community as well as to the research partners?

Will genuine and meaningful recognition be given to community contributions of time, knowledge and participation?

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This commentary was reviewed by Barrie Margetts, and by Geoffrey Cannon, who also edited the submitted version. *HVK writes:* I have worked closely with many Indigenous Peoples over many years. The Hopi subject matter was from my doctoral work in the early 1970s. Information about the food systems of Arctic Peoples in Canada was derived with colleagues during the late 1990s; the information from the Awajún, Igbo, Dalit and Pohnpei food systems came for work during the last ten years within the programme addressing food systems of 12 cultures of Indigenous Peoples in various regions of the world.

Many colleagues and friends have been committed to promoting local food systems of Indigenous Peoples, and especially through the work of the Task Force on Indigenous

Peoples' Food Systems and Nutrition of the International Union of Nutritional Sciences (IUNS). We of the IUNS recognise Barbara Burlingame of the Food and Agriculture Organization of the UN for her expert leadership in fostering this approach, key publications, and promoting several related policies.

Chief Bill Erasmus of the Dene National Office and the Assembly of First Nations in Canada has been a primary inspiration for this work. As Chair of the CINE Governing Board for many years, he has guided development of the participatory approach with Indigenous Peoples' research in many settings, both in Canada and internationally. As a professor at McGill University within the School of Dietetics and Human Nutrition, the privilege I have enjoyed of developing CINE and its colleagues has, I know, been invaluable to development of issues related to promoting and protecting the food systems of Indigenous Peoples and their right to their culture and traditional food.

Special thanks to my research assistant, Dina Spigelski, for her work in managing the logistics of communications, budgets and writings. Peter and Lisa Kuhnlein at kpstudios, Anacortes, Washington, USA, have provided invaluable and beautiful photographs, some shown here, that tell the stories often much better than the written word.

This reprinted commentary is also in memory of Lois Englberger and Elizabeth Chinwe Okeke