

ETHNOGRAPHIC ASPECTS OF HUMAN NUTRITION

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Summary

This review highlights several major ethnographic aspects of food use and human nutrition, and highlights the interplay between the biological and social sciences. Such an approach is appropriately labeled *biocultural*. This approach is firmly grounded in the biological basis for nutrient requirements. It builds descriptions and hypotheses from the fact that nutrients are embedded in food, and goes on to examine the ways in which human adaptation for the acquisition, preservation, distribution, and consumption of food has major influences on multiple aspects of social and cultural life throughout

human history. The processes of adaptation involve the interactions of biological, social, and environmental factors. These are evident in the evolution of the five main strategies for human food systems: hunter-gather, pastoral, horticulture, intensive agriculture, and industrial agriculture.

As industrial, multinational agriculture and food distribution become more widespread, the diversity of patterns that were produced over the course of human history are declining, thus making the identification and analysis of universals and culture-specific variations a contemporary imperative. Intersocietal and intrasocietal food distribution, along with intrafamilial food distribution, have profound effects on nutritional status of individuals, families, and communities. Cultural aspects of preservation and preparation of food, thus transforming it from its natural state into food acceptable for human consumption, are central features of human adaptation and ingenuity to provide nutrition. Ideas and beliefs about what is food, and what constitutes meals, include the symbolic and ritual significance within a culture that has nutritional consequences. Definitions of culturally specific acceptable food, its use, and nutrient composition and bioavailability are all part of this picture. Food-based programs to improve nutrition will be most effective when ethnographic aspects of food availability and use are well understood, and established societal adaptations are incorporated.

1. A Cultural-Ecological Framework for Understanding the Social Aspects of Nutrition

The dual nature of human nutrition provides nutritional sciences with unique challenges and opportunities as a multidisciplinary field. On the one hand, food is a biological necessity, and, on the other, social and cultural factors condition its availability and consumption. Thus, understanding the interplay between the biological and social aspects of nutrition requires an approach that incorporates both biological and social science. Such an approach is appropriately labeled *biocultural*. A biocultural approach to the cultural ecology of nutrition requires attention to a number of sectors. These have been identified as follows:

1. the biological and psychobiological needs of the individuals who comprise the society;
2. the physical environment (including climate, soil and water conditions, flora and fauna);
3. the technology that the society has available for food acquisition/production, distribution, and consumption;
4. the social organization of the society (including the family, community, and extracommunity systems for the management of food);
5. the ideological aspects of culture (the totality of beliefs, knowledge, and practices related to food) and
6. the social environment (the other societies and external social relations that affect how the society in question manages food acquisition, distribution, and consumption).

A holistic nutritional ethnography of an individual society covers each of these sectors and seeks to explain their interrelationships. Adding a time dimension provides a means

of understanding the processes of adaptation that produced the ethnographic picture investigators seek to describe.

A central idea that underlies a cultural-ecological approach to food and nutrition is the concept of adaptation. Anthropologists distinguish three different types of adaptive mechanisms: genetic, physiological, and cultural. All three types of human adaptation—genetic, physiological, and cultural—can be seen in the biocultural history of human nutrition.

Lactose intolerance is a well-known example of genetic adaptation, which is manifest as population differences in individuals' ability to produce lactase beyond the period of early childhood (see *Food Allergies and Intolerance*). It appears that in populations that are heavily dependent on dairy products as a major dietary component there has been a selection in favor of individuals who continue to synthesize lactase after early childhood. As a consequence the proportion of individuals in such a population who are lactose intolerant is small compared to populations in which this genetic selection has not occurred.

An important example of physiological adaptation is growth stunting. In the absence of sufficient intake of macronutrients to maintain normal growth in infancy and childhood, various mechanisms come into play to spare essential functions at the expense of musculo-skeletal growth. While the capacity to activate these mechanisms has a genetic basis, which is present in all populations, this type of adaptation occurs at an individual, physiological level.

The third type of nutritional adaptation is cultural-behavioral. Included within this category are a great variety of behavioral and cultural innovations to acquire, distribute, and consume foods. These include;

- the development of systems of food production,
- techniques for food preparation and storage that make it possible for humans to consume a wide variety of foods that would otherwise be inaccessible and survive in environments that would otherwise be uninhabitable by humans, and
- cultural beliefs and practices that regulate the distribution and consumption of food within the family and the larger community.

The specific challenges faced by human groups throughout our history have changed in relation to changing technologies of food acquisition, distribution, and consumption, and to the challenges presented by different environments.

2. Cultural Aspects of Food Acquisition—Types of Food Systems

Over the course of history, humans have created many ways of acquiring or producing the foods they need to sustain themselves and to promote the health and growth of their populations (see *Historical Origins of Agriculture*). Within this variety, anthropologists have identified five main strategies, which are often referred to as types of food systems. These are: hunting-gathering, horticultural (also called gardening, or slash-and-burn systems), pastoral, intensive agriculture (or irrigation agriculture) and industrial.

Although societies representing all of these types could still be found at the beginning of the twentieth century, most of these are giving way to the increasing dominance of industrial systems of food production, including the industrialization of agriculture.

Systems of food production exert a strong influence over various aspects of social organization and culture. For example, the type of family organization and kinship structure tends to be similar across hunting-gathering societies, compared with horticultural societies, even when they inhabit very different physical environments. Hunting-gathering favors the nuclear family as a common form of family organization and a bilateral kinship system, in which kinship is reckoned equally through both maternal and paternal lines. On the other hand, horticulture systems tend to be associated with extended family structures, while kinship ties typically favor either the matrilineal (inherit through mother) or patrilineal (inherit through father) side and either matrilineal (living with mother's kin) and patrilineal (living with father's kin) residence. Differences in family structure and kinship, in turn, have multiple effects on social life, childrearing, and other features of daily life.

At the same time, the challenges of adaptation in different physical and social environments, in interaction with cultural and social values, have produced a rich diversity in human selection of plant and animal species—both as dietary staples and as secondary components of dietary intake. These, in turn, are reflected in the details of food production, distribution, and consumption patterns across the world. The identification and analysis of universals and culture-specific variations is one of the fundamental challenges for biocultural scientists in nutrition.

2.1. Hunter-gatherer Food Systems

Food systems of the hunter-gatherer are comprised of animals, fish, and plants found in nature, and not dependent on agriculture for their production. This system prevailed through the vast majority of our evolution as a species, until the advent of agriculture 10 000 or more years ago. Hunter-gather bands, typically averaging less than 150 individuals, obtain food by following the seasonal cycles of the animals and plants they harvest. Small-scale societies based on a hunting and gathering food system can still be found in marginal lands not suited for agriculture, typically in the Arctic, the deserts of Australia and Southern Africa, and in the forested tropics of South America, Africa, and Asia. Contemporary examples of hunter-gatherer societies are the !Kung of Botswana, the Inuit in several circumpolar societies, and the Nuxalk, a Salish culture on the west coast of British Columbia. It is increasingly difficult for groups, even in these marginal areas, to maintain full dependence on hunting-gathering, and commercially produced foods are entering the diets of most such groups.

As contemporary hunters-gatherers are few and live in such marginalized circumstances, it is difficult to make generalizations about the nutritional adequacy of hunting-gathering systems based on these contemporary examples. However, there is substantial data from archeology and paleobiology from which it appears that humans who followed a hunting-gathering lifestyle were able to maintain a good level of health and nutritional status, particularly in more favorable environments. Accidents and

deaths in childbirth significantly reduced life expectancy, but there is little evidence of chronic nutrient deficiencies.

Concerning the social aspects of food production, hunter-gatherers tend toward a division of labor in which women harvest plant foods and men harvest animals and fish. All members of the family participate in food harvesting and contribute to the food supply. In these societies, sharing and generosity with food is the norm, and expectations of generosity contribute to equitable distribution of food and strengthen social interactions. Food species in hunting and gathering societies are often represented in ritual and religious practice, and the quest for food is often the focus of intense community interaction and cooperation.

2.2. Pastoralist Food Systems

Pastoralist food production is based on the herding of domesticated animals (see *Animal Husbandry, Nomadic Breeding, and Domestication of Animals*). Usually this mode of production occurs in areas of semiarid open country. The animals upon which pastoralists depend may be sheep, goats, cattle, camel in East Africa and the Middle East, horses in Mongolia, and reindeer in northern Europe and Asia. Among the few pastoralist groups that managed to maintain their way of life through the end of the twentieth century, the Maasai of East Africa are an excellent example. As is typical of pastoralist adaptations, the Maasai enrich the animal components of their diet with grains and wild and cultivated plants.

The diet is based primarily on animal products (milk, blood, and their products). In spite of high intake of these products, studies of contemporary pastoralists indicate that they do not suffer from the cardiovascular disease that is prevalent in sedentary societies in which people consume large quantities of animal products.

Often pastoralists have seasonal camps where crops may be cultivated, or they interact with neighboring agriculturalists to obtain plant foods. Much of family life is centered on the needs of the animal herds for which a pastoralist group is responsible. The division of labor in these societies is based on herd tending by men and boys. The gathering or cultivation of plant foods by women contributes relatively small amounts to the total household diet.

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Biographical Sketches

Harriet Kuhnlein received her doctorate in nutritional sciences from the University of California at Berkeley (US) following her Bachelor's degree from Pennsylvania State University (US), and received her Master's degree from Oregon State University (US). From the mid-1970s until 1985 she was an assistant professor, then associate professor, at the University of British Columbia, Vancouver, Canada. In 1985 she assumed the directorship of the School of Dietetics and Human Nutrition at McGill University, Montreal, with a cross-appointment in the Faculty of Medicine. From 1993 to 1999 she served as Director of McGill's Centre for Indigenous Peoples' Nutrition and Environment (CINE), and now continues as Professor of Human Nutrition and Founding Director. Her research has focused on cultural and environmental considerations of traditional food systems of indigenous peoples, with emphasis on patterns of food use, nutrient composition, and nutrition improvement programs. In addition to work in developing countries, she has worked with more than 15 cultures of indigenous peoples in North America, including the Dene/Metis, Yukon First Nations, and Inuit in Arctic Canada.

Gretel Pelto, Ph.D. has an undergraduate degree in sociology, and earned her Master's degree and Doctorate in anthropology at the University of Minnesota. She was also awarded an honorary doctorate in nutrition from the University of Helsinki, Finland. From the mid-1970s until 1992 she was a member of the academic faculty in the Department of Nutritional Sciences at the University of Connecticut, with joint appointments in the Department of Anthropology and the School of Medicine. Her research, which focused on sociocultural aspects of infant and young child nutrition, was conducted primarily in Mexico and Finland (including coprincipal investigator of the Nutrition CRSP on Intake and Function: Mexico). In 1992 she joined the World Health Organization in(Geneva, Switzerland, where she was responsible for behavioral research on home case management in the Division of Child Health and Development. She is currently Professor of Nutritional Anthropology in the Division of Nutritional Sciences at Cornell University, Ithaca, NY, US.