
Food insecurity, helplessness, and choice: Gender and diet change in the central Himalaya

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Abstract

Himalayan diets, along with agricultural and health systems, have been undergoing significant changes over the past fifty years though little research has documented this transition. Using semi-structured interviews and focus groups with elder women villagers in the Rudraprayag district of Uttarakhand, India, we explore women's experience of diet change, recollections of the traditional diet, and the perceived factors motivating contemporary diet change. Findings show that the Himalayan diet has shifted from a complete reliance on traditional crop varieties and home-grown and foraged foods to an increasing dependence on processed and store-bought foods. Women view the traditional crops and foods as healthier than store-bought foods, yet they have been active participants in erecting market-based foodways. The support of the contemporary - or market-based - diet is attributed to gender roles. Specifically, women's experiences with gendered cultural norms of consumption, including regular bouts of food insecurity commonplace within the traditional diet, serve to valorize aspects of the contemporary diet among Himalayan women.

Keywords: Agriculture, diet change, food, gender, hunger, India

Introduction

The pace of diet change worldwide has accelerated over the last 50 years, and for many this has brought positive outcomes such as less hunger, more food diversification and improved access to necessary nutrients (Popkin, 2006). However, diet change has also generated less positive consequences that are only now being understood, such as the introduction of new diet-related diseases (e.g., diabetes, cardiovascular disease), resource degradation, along with the erosion of cultural foodways and indigenous agricultural and food-related knowledge. Some diet changes have also threatened community self-sufficiency as consumers increasingly look to unstable commercial food markets to satisfy their needs. Such consequences can threaten a community's ability to provide for themselves or to control their own food supply and public health. Challenges such as these are the impetus for a better understanding of the complexity of diet change that we consider in this paper.

Diet change has primarily been linked to economic development. In the Himalayan region of

India, the development of roads, schools, and markets (Kreutzmann, 1991; Rawat and Sharma, 1997) are frequently looked upon favourably. Few mountain communities resist increased access to medical clinics, additional primary and secondary educational institutions, growth in tourism which generates the required income, or new infrastructure that facilitates the ability to travel and communicate easily (Rawat and Sharma, 1997). However, such development has featured prominently in dietary change by increasing knowledge of and access to an array of new foodstuffs.

Relatedly, road construction in the Himalaya has led to greater soil erosion and landslides (Rawat and Sharma, 1997). Changes in traditional agricultural practices have also led to increased soil erosion, as well as a loss of both agricultural biodiversity and agricultural knowledge (Maikhuri, *et al.*, 1996). Increased contact with tourists and migration to urban centres has also facilitated a desire to modify traditional foodways (Tripathi and Srivastava, 2011). In addition, the increasingly global food system creates the conditions in which consumers struggle to maintain control of their diet when commercial markets begin to dot the landscape (Patel, 2009). The loss of cultural practices and traditional foodways can have negative health impacts and also represent a loss of knowledge that has been generated over hundreds of years (Kuhnlein and Receveur, 1996; Narayanan and Kumar, 2007).

Though significant research has been done on the changes to the traditional production systems in the Himalaya (Maikhuri *et al.* 1996; Negi *et al.*, 2009), investigation into changes to the traditional diet and foodways remains increasingly limited. Diet and production systems are closely linked; however, the exact nature of change in the Himalayan diet over the last fifty years has not been fully documented. Research on diet change in India as a country indicates a significant increase in diet-related diseases nationwide (Misra *et al.*, 2011), yet, the unique context of diet change in distinct regions has received little attention. Research into the ways in which these traditional food systems are changing and the precipitating factors stimulating new diets is necessary for addressing problematic health and ecological consequences communities face as their food systems transition.

Gaining an understanding of diet change, as recounted particularly by villagers, requires a window into day-to-day Himalayan food habits, including subjective experiences and views of the traditional diet. Elder women, in particular, are positioned at an exceptional socio-cultural location to share this knowledge. The life-world of women are comprised of food production and consumption obligations, presenting a unique opportunity to explore diet change from the vantage point of the primary cultivators/food preparers in Himalayan households (Agarwal, 2002; Mukherjee, 1999). Elder women also grew up cultivating, harvesting, and consuming traditional foods. Their unique gendered experience with many facets of the traditional diet makes elder women an exceptional population to study. The focus on women's unique knowledge and perspective that comes from their gender roles can lead to "empirically more accurate descriptions and theoretically richer explanations" (Harding, 2001:145) with regards to diet change, according to feminist standpoint perspective.

Through qualitative interviews and focus groups conducted with elder women aged 60-80 in Uttarakhand, India, we explore the changing nature of the central Himalaya diet. The narratives of these women emphasize a significant diet change linked to both household

dynamics and structural conditions. Findings reveal that the traditional diet of households in this region is slowly being replaced by commercial foods purchased at local markets even though women view a market-based diet, or store-bought foods, to be nutritionally inferior to their traditional diet. This paradox is, in part, explained by the associations women have to the traditional diet. In reflecting upon changing foodways over their lifetime, elder women attribute diet changes to three factors: 1) personal preferences of taste, quality and healthfulness; 2) deprivation, hunger and *mazburi* (helplessness); and, 3) gender roles.

Literature review

A literature review describing traditional diets from different parts of the world and the changes these diets have undergone, reasons for these changes, and diet change in India, and specifically of the Himalayan region was conducted.

Traditional agricultural and food systems (agrifood systems¹) have been passed down for generations and have developed in relationship to local ecological systems and human cultures. Erected upon indigenous knowledge, they have sustained communities for hundreds, if not thousands, of years (Kumar and Pathak, 2010). Ecological and cultural systems are frequently tightly coupled in communities that consume what they produce from their local surroundings (Hawkesworth *et al.*, 2010). Traditional agrifood systems are becoming more important to research in the areas of agricultural development, food security and health (Frison *et al.*, 2006) as destructive consequences of modern food systems are revealed.

Kuhnlein and Receveur (1996:418) define a traditional food system as “*all food within a particular culture available from local natural resources and culturally accepted. It also includes the sociocultural meanings, acquisition, processing techniques, use, composition, and nutritional consequences for the people using the food.*” Traditional agricultural systems “*represent centuries of accumulated experience of interaction with the environment by farmers without access to scientific information, external inputs, capital, credit, and developed markets*” (Altieri and Merrick, 1987:88). They also are characterized by a high degree of plant diversity and cropping systems which promote a diverse diet; decreased insect and disease incidence; and efficient use of local resources (Fleuret and Fleuret, 1980; Kuhnlein and Receveur, 1996). Common elements of a traditional food system often include staple foods, such as starches and grains, small game, and plants which are either cultivated, gathered from the wild, or gathered from areas that have been cleared. These include mushrooms, leafy greens, fruits, and roots (Fleuret and Fleuret, 1980). Many of these foods are very high in nutrient content (Mnzava *et al.*, 1999).

Traditional food systems are also based on acquisition and cultivation practices that have been pivotal in helping populations sustain themselves (Kuhnlein and Receveur, 1996). Tribal communities living in the state of Sikkim, India in the Eastern Himalaya gather up to 190 wild edible species of plants as part of their regular diet, while continuing to cultivate traditional grains (Sundriyal and Sundriyal, 2001). These wild plants – rich in fiber, vitamin C, and iron - are gathered seasonally and help to maintain the biodiversity in the local eco-systems (Sundriyal and Sundriyal, 2001).

As development proceeds, populations can become further removed from their traditional food systems. Around the world, populations are shifting from agrifood systems based on local resources to input and capital intensive, industrial systems where resources are sourced globally (Damman *et al.*, 2008; Popkin, 2001). Though there are many positive attributes frequently associated with the industrial food system such as convenience and high productivity, it is important to understand the less desirable attributes of this transition. What is being lost? Environmental degradation and diet-related diseases are increasingly being linked to adoption of an industrial agrifood system (Altieri, 1995; Buttel and Gertler, 1982; Rosset and Altieri, 1997). Many contend that traditional systems can serve as a vital corrective to these challenges. In their work linking agricultural biodiversity to nutrition and health, Frison *et al.* (2006:176) call for the “reintroduction” of traditional food systems to repair modern diet-related diseases, reduce malnutrition, and improve agricultural diversity, particularly in the developing world.

A closer look at the diet change process reveals that dietary changes have been attributed to a range of factors, from micro-level indicators, such as personal preferences, to more macro-oriented structural conditions, including changing policy or global markets (Caplan, 2002; Mead *et al.*, 2010; Popkin, 2006). Structural conditions that affect diet change include technological shifts in agricultural and food sectors (Popkin, 2006); changes in household income or in the global marketplace (Kearney, 2010); greater access to commercial markets; political practices, such as the removal of indigenous communities from ancestral land (Damman *et al.*, 2008); increased access to media and advertising, such as television (Popkin, 2006); and environmental degradation (Kuhnlein and Receveur, 1996).

Most recently, diet change has been linked to increased consumption of sugar and edible oils, which are implicated in human health problems, such as diabetes, obesity, and other diet-related diseases (Kearney, 2010; Martorell, 2002). Diet change has also been linked to increasingly degraded environments due to the introduction of high-input industrialized agricultural systems (Shiva, 1991); significant loss of cultural practices and knowledge systems (Kuhnlein and Receveur, 1996); and loss of food sovereignty (Pionetti, 2006).

Popkin (2006) refers to a shift away from the traditional diet as the “nutrition transition”. Though Popkin’s emphasis is on developing a national-level and global picture of diet change with the goal of addressing health impacts, he acknowledges that the nutrition transition is a

complex interplay of changes in patterns of agricultural, health, and socioeconomic factors... One needs to be concerned with food supply, which relates to agricultural systems... economic resources, demographics, various cultural and knowledge factors associated with food choice, and also disease patterns, sociological considerations such as the role of women and family structure (Popkin, 2002:111-112).

This transition often takes on a special character within the developing world. Developing nations are more likely to experience a “double-burden” of diet-related diseases on the one hand, and the simultaneous struggle to provide for the basic needs of their population, on the other hand (Popkin, 2001). As a rapidly industrializing nation, India is often touted as illustrative of such a nation mired in this double-burden (Kearney, 2010).

Other studies have discussed cultural issues such as food sovereignty, indigenous knowledge and ecological systems that are also impacted by diet change. Kuhnlein and Receveur (1996) cite numerous cases of significant change to the traditional diets of diverse communities such as the Kung Bushmen of the Kalahari Desert; the Nuxalk, an indigenous community in British Columbia; and the Hopi of the Southwest United States. These communities were not only found to have significant health problems associated with diet change, but to have also consistently lost traditional food practices and knowledge, as well as experienced environmental degradation in conjunction with a shifting diet. For example, the Kung Bushmen survived for many generations with their traditional diet based on local and diverse sources of animal protein, wild-gathered plants, and nuts, experiencing very few diet-related diseases. However, their diet began shifting in the 1960's to eventually become fully dependent on commercial maize consumption. By the 1980's researchers began to see high rates of anaemia, parasitism and liver damage, attributed, in part, to diet change (Kuhnlein and Receveur, 1996).

One area of changing food systems in which the loss of knowledge is palpable is in the practice of seed saving. Seed selection and storage requires an incredible amount of knowledge about varietal differences, crop diseases, nutrition, and food preparation (Pionetti, 2006). Women farmers in the drylands of South India hold a tremendous amount of knowledge in terms of the types of seeds they save and their uses; when and where to plant specific varieties; the nutritional value of different crops; and the qualities that make certain varieties better for food preparation than others, such as taste and cooking time (Pionetti, 2006). However, as agrifood systems and diets in India shift, the reliance on saved seed and subsistence crops is replaced with purchased inputs for commercial cropping and a market-based diet (Finnis, 2007). The knowledge of seed saving for subsistence crops may be lost when communities no longer rely on those crops for food.

The ownership of seeds and the capacity to control food production is an integral part of food sovereignty. Food sovereignty is

the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of market and corporations... (Via Campesina, as cited in Patel 2009:666).

Food sovereignty is threatened when groups are unable to access culturally-appropriate or healthy foods, whether due to policy or cultural practices that have removed peoples from their own land, as in the case with many indigenous communities in the United States (Damman *et al.*, 2008), or because healthy foods are too expensive, then food sovereignty is put at risk. Considerations of the health impacts of diet change are important, but are not separate from, or more important than, other cultural consequences, such as a loss of food sovereignty, conventional foodways, or indigenous knowledge.

Finally, diet change is also gendered. We consider diet change gendered because women and men often enjoy different diets and experience diet change in distinct ways (Hansford, 2010).

Though studies on the nutrition transition have acknowledged gender, the perspective in the literature on how gender is related to diet change seems limited to the ways in which women's rates of obesity are different from men's, and how women's employment outside of the home impacts the diet of the family. Popkin (1993:143) writes that

particularly important in the nutrition transition are associated changes in the roles of women (especially with respect to patterns of time allocation), in income distribution, and in household food-preparation technology.

Hansford (2010) goes further than to introduce time management by arguing that a gendered perspective on diet change and the nutrition transition can yield deeper insights. Women have access to different kinds of food due to household dynamics and they experience differences in physical activity, including the ability to leave the home. Hansford found that in urban settings women may be less physically active than men due to their household roles and limitations on their movement outside the home, and that women may reserve healthier foods for male family members, negatively impacting women's health more than men's. These conditions affect communities in distinct and specific ways, highlighting the need to understand the micro-level of dietary change, as broader global and national data can overlook regional variation (Finnis, 2007).

The study of national trends of diet shift in India does not reflect the great regional variation in the consumption of coarse cereals (Kumar and Mruthyunjaya, 2007), nor does statistical data allow for a qualitative understanding of the "the physical factors that farmers perceive as affecting crop productivity and viability" and the "the priorities, preferences, and aspirations" of people themselves (Finnis, 2007:343). Finnis, in her study of diet change in the Kolli Hills in South India, found that local communities were moving away from traditional food systems, with corresponding negative health consequences. She emphasized the importance of understanding the reasons for these changes, from broad-scale economic changes, to household decision-making, to personal preferences and food choices. She found that the shift in diet away from local millets was related not only to the adoption of newer commodity production of cassava, but also linked to a decline in access to millet in the local markets, and the difficulty of purchasing a diverse selection of food supplies when families had to haul them up steep mountains (Finnis, 2007). Through qualitative research with villagers, Finnis was able to paint a much more nuanced portrait of the complexity of diet change.

India, central Himalaya and agrifood system change

The incredible regional variation of traditional agrifood systems in India is increasingly being replaced with industrial foodways. India is currently undergoing a nutrition transition typified by the double-burden of hunger/malnutrition prevalence, along with diet-related diseases linked to an industrial food system (Misra *et al.*, 2011). Overweight/obesity in Indian urban adults has increased from 13.3 percent to 37.8 percent for males and 15.6 percent to 50.3 percent for females from 2001 to 2007; and rates of Type II Diabetes have increased from 4.6 percent in 2001 to 7.3 percent in 2008 (Misra *et al.*, 2011). At the same time, over 20 percent of urban women and 50 percent of rural women are considered underweight (Popkin, 2006).

The nation is also experiencing severe levels of environmental degradation, such as soil erosion,

water and air pollution, and the loss of biodiversity related to changes in the shift from traditional agrifood systems to industrial food systems (Shiva, 1993). Topsoil in 60 percent of the geographical area of Haryana is now considered to be degraded due to water-logging, salinity, and alkalinity – byproducts of intensive farming during India's Green Revolution. (Singh, 2000). The technological changes brought about by the Green Revolution led to a shift in agrifood systems from localized diverse systems to monocultures of rice-wheat cropping systems (RWCS) (Kataki, 2002). Not only did the agrifood systems change from diverse traditional systems to the RWCS, the Indian diet shifted from diverse plant-based consumption to reliance on wheat and rice (Kataki, 2002).

Furthermore, the accompanying chemical package required to grow the high-yielding rice and wheat includes chemical fertilizers and pesticides. Years of fertilizer and pesticide use and intensive cultivation practices have led to soil erosion, water contamination, and loss of insect biodiversity along with other environmental problems (Kansal *et al.*, 1996; Shiva, 1991). Heavy reliance on intensive irrigation has led to declining aquifers and soil salination (Kansal *et al.*, 1996). Pesticide use is also implicated in increased rates of kidney disease and cancer, among other ailments (Abhilash and Singh, 2009).

Traditionally, Indian agrifood systems included genetic diversity, as well as a high variation in different foods such as pearl millet, barley, sorghum, maize, whole wheat; pulses, local fruits and vegetables; and a wide range of spices (Misra *et al.*, 2011). Kataki (2002) found that traditionally throughout India, there were at least 30 different cropping systems more prevalent before the Green Revolution, such as rice-rice, rice-pulse, and cereal-oil seed, which provided diverse diets. He also found lower levels of childhood stunting (deficiency in height for age) in regions of India that continue to consume their traditional, diverse diet, while areas that have shifted to monoculture RWCS have experienced a related increase in childhood stunting and malnutrition. In an increasingly urbanized India, diets are shifting towards higher levels of sugar, oils, processed and packaged foods (Caplan, 2002), while at the same time, greater amounts of fruits and vegetables are consumed (Verma *et al.*, 2007).

It is important to recognize that national conditions do not necessarily reflect regional circumstances (Kumar and Mruthyunjaya, 2007). This necessitates sensitivity to regional variation in diet change and its ensuing impacts. In India, the Himalayan region is unique geographically and culturally, in part, due to the topography which has isolated mountain communities more so than those in the plains areas to the south (Singh, *et al.*, 2010). Beginning in the 1960s, however, a network of paved roads (Kreutzmann, 1991) along with the adoption of mass media, such as television, connected mountain Indians to a global society (Singh *et al.*, 2010). Moreover, cultural exchange is taking place, as the Indian Himalaya is a revered tourist destination for national and international travellers; and as mountain people migrate to the plains and other urban centers in search of employment, returning to their villages bringing new cultures home (Singh, *et al.*, 2010).

In the context of broader cultural changes, traditional Himalayan agrifood systems are transforming rapidly. There is much evidence that traditional agricultural and food systems are eroding, with some negative ecological and health consequences for local communities (Nautiyal and Kaechele, 2007; Negi *et al.*, 2009; Subeti, 2010). For example, as monoculture apple

production increases, landscape terraces that were previously used for a wide assortment of traditional crops are converted to commercial apple production. The apple varieties produced are less diverse, dependent on chemical inputs, and developed for export markets. This increased the dependence of local residents on market-based foods. Negi *et al.* (2009) found that in apple producing areas, there was a decrease in the planting of traditional trees which had a variety of uses from fodder for cattle to food and fuel, which, in turn, placed greater pressure on forest resources.

The Himalaya are also known for high biological diversity in their traditional diet (Maikhuri, *et al.*, 1991; Sundriyal and Sundriyal, 2001). Food plants include an array of varieties of millet, barley, rice, sorghum, and wheat (Maikhuri *et al.*, 1999) and wild greens and fruits (Sundriyal and Sundriyal, 2001). Diversity also extends to the cropping systems themselves (Negi *et al.*, 2009), including a well-known traditional cropping system called *baranaja* — the sowing of twelve different crops together at the same time (Sati, 2005). Ninety percent of the cultivated areas in the central Himalaya have traditionally been devoted to subsistence crops grown for the domestic market or local consumption, and cultivation has been closely linked with other subsistence activities which “form an integrated production system for sustainable livelihoods” (Negi *et al.*, 2009: 313), a close articulation between traditional production systems and diet. Traditional Himalayan food and farming systems are highly diverse, dependent on local resources and knowledge bases, and locally developed technologies (Negi *et al.*, 2009). Moreover, many of the traditional foods and crops are highly nutritious and are also used for medicinal purposes (Dangwal *et al.*, 2007; Maikhuri *et al.*, 1991). However, research over the last 20 years has consistently documented a decline in traditional agricultural practices and systems; and a loss of traditional agricultural knowledge and crop diversity (Maikhuri *et al.*, 1996; Maikhuri *et al.*, 1999; Nautiyal and Kaechele, 2007; Saxena *et al.*, 2005). From 1970 to 1990, the area under cultivation of several important traditional crops declined between 60 to 80 percent due to changes in cropping systems, environmental degradation, migration, and cultural shifts (Maikhuri *et al.*, 1991).

Furthermore, women experience diet and diet change differently than men (Hansford, 2010). Caplan (2002) studied middle-class women in Madras in 1970 and then again in 1990 and found a number of factors that stimulated transition from their perspective: television advertisements; the convenience of store-bought food, increasing local restaurants, and the use of electrical appliances. Each, in turn, affected a shift towards a diet higher in salt, sugar, and fat, and away from the traditional foods the women had previously prepared.

Women also provide the bulk of labour to sustain traditional farming systems (Agarwal, 2002). Men are typically responsible for building terrace walls and ploughing fields, while women perform all other tasks, including sowing seeds, weeding, pest control, fertilizing, harvesting, and food preparation (Agarwal, 2002; Mukherjee, 1999). This division of labour has become even more pronounced as more males out-migrate in search of employment (Mukherjee, 1999). As a result, women possess a tremendous amount of ecological and agricultural knowledge, gained through their day-to-day tasks, and passed down from generation to generation (Agarwal, 2002; Howard, 2003; Shiva, 1993).

Regional overview and methodology

The state of Uttarakhand lies in the northern part of India and borders the states of Himachal Pradesh and Uttar Pradesh, as well as Nepal and Tibet. Uttarakhand (also referred to as Uttaranchal) comprises 13 districts (Sati, 2005), where 90 percent of the land is hilly or mountainous and over 60 percent is forested (Maikhuri, *et al.*, 2009). Weather is relatively unpredictable and different weather conditions can occur within a short time span (Capila, 2002).

Uttarakhand is home to an incredible diversity of plant and animal species, microclimates, cropping systems, terrain, and human cultures (Saxena *et al.*, 2005). The state is rural, with a population of six million (density of 94.4 persons per square kilometre). Seventy percent of the land holdings are considered marginal and 36 percent of families live below the poverty line (Maikhuri *et al.*, 2009). Agriculture is the main occupation in the region with 75 percent of the population engaged in agricultural work (Sati, 2005). The traditional agrifood system is characterized by mixed planting systems; rich crop biodiversity; reliance on human hand labor - primarily women's labour due to high male outmigration - terraced fields; integration of cattle and other livestock for manure and labour; low chemical input and relatively low productivity; and is primarily rain-fed (Chandra *et al.*, 2011). Such biodiversity is characteristic of traditional agrifood systems in Uttarakhand, but is also maintained by cultural practices, such as the preservation of indigenous knowledge and traditional food preparation (Nautiyal *et al.*, 2008). The agrifood system has historically relied upon a wide variety of traditional crops and their varieties such as millet, amaranth, rice, kidney beans, and lentils. However, research has shown that crop diversity is declining and soil erosion and other ecological degradation is linked to newer, more intensive agricultural practices (e.g., monoculture and chemical inputs), characteristic of industrial agriculture (Maikhuri *et al.*, 2009; Saxena *et al.*, 2005).

The state of Uttarakhand is culturally divided into two main regions, Garhwal and Kumaon. Garhwal, where this study was conducted, is located in the western half of the state including the Rudraprayag, (Pauri) Garhwal, Tehri Garhwal, Hardwar, Dehradun, and Uttarkashi districts. As the Rudraprayag District is in Garhwal, all participants in this study spoke Garhwali as their first language, and identified culturally as Garhwali.

Field research for this study was carried out in three villages in the middle elevations, ranging from 3000 to 6000 feet Saari, Kandara, and Rounlenk villages. They are clustered in three main areas along major paved roads that lead to two important pilgrimage sites, Kedarnath and Badrinath. Being on these major roads, or within ten kilometres, means that there is a significant amount of tourist traffic during the summer. The proximity to roads also allows villagers easier access to markets and public transportation, as well as greater contact with tourists.

Since all the land in the district is relatively mountainous, the homes are built into the hillsides, and the fields are all terraced. Roads, markets, medical shops, and other developments are relatively recent in these villages — road construction began in the 1960's, and other markets and shops were built thereafter. Thus, the older generation easily recalls village life of this time period. This generation also remembers the traditional ways of eating before the possibility of purchasing food supplies from the markets.

This study employed focus groups and semi-structured interviews. Data were gathered during

the months of June and July 2011. Three focus groups were conducted with groups of women aged 24-72. Each group had between seven and sixteen participants. Fourteen interviews were also conducted with thirteen women ages 60-80. Interviews and focus groups lasted anywhere from a half hour to an hour, were audio-taped (when permitted) and transcribed.

Questions were developed to guide the interview, yet were left open to allow themes and patterns to emerge that could not have been anticipated by the researchers. Interviews provided a forum for drawing out the kind of depth and detail which illustrated changes to a person's behavior and attitudes, such as what types of food they prepare, how often, and with whom; how these behaviors have changed over time; as well as opinions about these processes. Focus groups were used to create a space which would allow participants to engage in dialogue with each other, especially to elicit memories. Several of the questions required women to recall daily diets of fifty years ago and being with other women of the same generation stimulated recall. It is possible, however, that some clarity of recall may not have been accurate and for this reason caution must be exercised in analysing data. However, focus groups also served to confirm memory on certain topics, such as the perceptions of the health benefits of traditional crops and the level of drudgery women experienced over time. A general inductive approach to data analysis was used. Transcripts were read and coded based on the emergence of significant textual themes.

A local translator was always present to conduct the interview and focus groups. All women interviewed spoke Garhwali. All the women gave their names as a first name followed by Devi, which refers to the female aspect of the divine. The names used in this paper are pseudonyms.

Staying in family homes, working in the gardens with women, and spending two months in the region also allowed for unstructured observations that complement the formal data collection. Respondents were chosen to more deeply understand the experience and perspective of elder women in the middle hills of Uttarakhand in regard to diet change, traditional agrifood systems, and health. Moreover, as women, they have been primarily responsible for the cultivation and preparation of traditional crops and foods (Agarwal, 2002).

Results

Respondents were asked to recall their daily diet both today and in the past. The information and experience they shared is from their memory. General trends over the last fifty years, particularly the last 15-20, are considered to be the time period to which they are referring.

Changes to the hill diet in the memories of these respondents are significant and vast. Women began excitedly communicating changes to the daily intake of food by seasonality, but they also carefully extolled changes in purchasing practices, preparation processes, culinary acumen, and new structural impediments to their traditional diet. The traditional hill diet, as described by respondents, traditionally consisted of grains, green leaves, vegetables and fruits, spices (masala), drinks, dairy products, oils, wild foods (non-cultivated, gathered from the forest or cleared land), and pulses (beans and lentils).

While discussing the ways in which the traditional diet has changed and continues to change, women shared a diverse array of experiences and views of traditional foods. They began by recounting general trends that affected all, but gradually presented a more gendered portrait of how changes shaped their dietary experience. The qualitative data in this section complicates the picture of change, demonstrating that diet change is a complex interplay of desired foodways within a context of structural opportunities and limitations. Socio-cultural experiences with food shape both food choice and desire, as do ecological, social, and political changes. Moreover, these data reveal the importance of a gendered inquiry into these complex processes, as gender roles, and power hierarchies proscribe differential relations to diet.

Health, taste, freshness, and quality

Health, taste, freshness and quality differences between the traditional and the contemporary diets were reoccurring themes that emerged from our respondents. Most respondents shared a perception that people were healthier in the past due, in part, to the traditional diet. Traditional foods not only provide essential nutrients, but also contain medicinal properties (Dangwal *et al.*, 2008; Maikhuri *et al.*, 1999; Narayanan and Kumar, 2007). Anjali Devi shared her impression that people were stronger in the past and that there were fewer diseases, while in the present people tend to succumb to illness more readily and are perceived as weaker humans. She stated “food in the past was pure and good, though it was not sufficient, whereas today there is plenty, but it is not healthy.” Another gave a specific example, saying that nowadays people heal more slowly from wounds, whereas “in previous days when people cut themselves with their tools they would grab some medicinal leaves from the jungle and hold it over the cut and the body healed quickly.” Indu Devi recalled that, “Sometimes we would feel some stomach pain. We would drink boiled water with salt. There was nothing extra we could give sick people, but we would give hot water with salt for stomach pains,” and this type of remedy would be enough to help people heal. The ability to heal quickly or avoid illness was firmly connected in their minds to the quality of their traditional diet.

Hill women also noted that their traditional diet was fresher, tastier, and of higher quality than purchased foods. Hasna Devi articulates this view:

The taste of the new varieties is different from the older varieties. We look at the color and decide which is tasty and which is not. These days the pumpkins are not as tasty...The taste of the vegetables I grow are better than the ones you eat in your city [pointing to the onion drying on her terrace]. These are tastier than the ones you eat in your city. The ones we grow ourselves taste better than the ones we buy in market. The onions from the market are more bitter (Interview, Garhwal, June 2011).

Bairavi Devi added that:

kapala (a dish prepared with flour or broken grains mixed with greens) gives a lot of energy... rice and wheat are not as nutritious and do not give as much energy.” Hasna Devi noted that [w]e never eat only atta (wheat flour), we always mix mandua (finger millet)” because “rice and atta are not good. You don’t know how long the rice and atta has been in the store or where it comes from so it is not healthy for you.” Indu Devi commented that “people were stronger back then.

Eka Devi used the body language of muscular arms to show the strength one gets after eating kapala, greens rich in vitamins. Rice and wheat roti do not give the same strength, according to these women. Eka Devi pointed to one of the younger women seated nearby and described her as weaker because of her preference for rice and wheat roti. Many identified three dairy products - ghee, yogurt, and milk - along with mandua, as the foods providing the most energy; others added jhangora (barnyard millet) to this list of the most nutritious foods. Neither white rice nor wheat flour, or any purchased item, was noted as being healthier than the traditional grains and dairy products.

Respondents also repeatedly articulated medicinal benefits of the traditional foods, reflecting a similarity to many traditional cultures in which food and medicine are integrated. Others associated the medicinal properties of mandua with its ability to treat diabetes and digestive problems, as well as to contribute to bone density. Still, others described the use of koni (foxtail millet) grains to treat female reproductive disorders, specifically the use of seven year old koni grain. The age and the type of grain was noted as particularly important. "Sometimes a lady has suthigya after delivery - she gets dysentery, vomiting, fever. People gave her old koni bat. The seven year old koni is the best" (Hasna Devi). A type of black rice, not grown commonly in the present, was also popularly used to treat women's reproductive disorders in the past. Narenderji described the use of lal chaval (a traditional variety of red rice) used to treat kidney stones; jhangora to treat jaundice when prepared with buttermilk; kandali (nettle) to treat joint pain; timla (fig) to treat dysentery and other digestive problems; and mol (fruit similar to a pear) to encourage lactation.

Even though respondents believed their traditional diets were fresher, tastier and healthier in the past, and that they enjoyed higher levels of energy and medicinal benefits, they were also simultaneously participating in a transition away from this diet. This tension draws our attention to the socio-cultural dimensions of how and why diets change. As Finnis (2007) found in her study in the Kolli Hills in South India, families preferred traditional foods, but due to changes in the political ecology and the economy, were unable to access them. Though the communities in the Kolli Hills are distinct from those of the middle hills of Himalaya, Finnis' study lends insight into the complexity of the process of diet change taking place in Uttarakhand, and the importance of understanding the experience of diet change from community members.

Food insecurity, hunger, and mazburi

In addition to the perception of healthfulness, taste, freshness and medicinal properties, the traditional diet was also cast in a more negative light - as insufficient. All participants reported experiencing deprivation and hunger on a regular basis in previous years, a condition they claimed was no longer common. The respondents also described the traditional diet as lacking in variety. Not only were they monotonous, many also described their traditional diet as bland, or boring. Women attributed to the development of commercial markets a variety in range of products available. The word *mazburi* - which translates as helplessness or compulsion - emerged frequently as women attempted to describe their traditional foods. They *had* to eat traditional foods, due to a lack of choice; now the market brings variety.

The typical middle hills household was forced to divide limited food supplies among members.

Many respondents indicated that they never felt satiated with their own family's food supply, nor did they have access to a market or income to purchase foods, which has led them to associate traditional foods with the experience of hunger and food insecurity. This experience of deprivation is intimately connected to the significant changes in diet Garhwalis are currently experiencing. Foods which evoke memories of empty stomachs, deprivation, or mazburi are considered less desirable in the present given the other options now available. Thus, many traditional foods are affixed with a symbolic representation in this case it is hunger, food insecurity, and helplessness. As such, they are less desirable and when combined with the heavy workload to cultivate them, along with ease of access of store-bought foods, are important factors to help account for diet change. Indu Devi described this period:

In those days there was not enough to eat. Sometimes we did not eat breakfast and only ate lunch and dinner but sometimes there was not enough food for lunch and dinner. Sometimes we would cook and serve what we had and split between everyone, but it may not always fill your stomach (Interview, Garhwal, June 2011).

Many remember a feeling that some foods were not tasty, but they had no choice, but to eat from the local landscape to fill their stomachs. For example, Bairavi Devi described the use of timla in the diet:

Some poor families, if they had no atta (flour), they would eat only the paste of the timlas. They picked the unripe fruit (soft but not sweet) and mixed it with ash to counter the taste and stickiness of the fig milk, boiled it, and then made a paste. Then they would prepare roti and kapala and eat with only a little masala. They did not like this, but sometimes they had no choice (Focus Group, Garhwal, July 2011).

Indu Devi recounted eating palyo (a dish made with greens and a specific type of millet) and kapala, saying,

People used to have no income so people filled their stomachs with black palyo, they would just drink it, and kapala. They had no other options and even this would not fill their stomachs (Interview, Garhwal, July 2011).

Thus, some traditional dishes and foods eaten primarily to fill the stomach, were not necessarily enjoyable, and even then it was often insufficient.

Women felt that in their youth they had very little choice in their diet due to the lack of options and supply, and that they ate to fill their stomachs, whereas nowadays people eat what they choose and are able to eat for desire. The contemporary, or market-based diet, offers choice, abundance, and freedom from many time-consuming agrifood production and preparation tasks. Hasna Devi explained, "Presently people eat different kinds of food and they have a lot of choice. They hear about other types of food and they want to taste it. People take the opportunity to taste new things when possible." The ability to eat what one enjoys, just for the taste, was an important change for many women, because it freed them from mazburi, or the helplessness of eating only what their environment could provide. Purchased food also has the advantage of saving women hours of labor from cultivation, processing, and preparation tasks.

Though women had many positive perceptions of most of the traditional crops and foods in terms of taste and health, the association with deprivation, monotony and hunger was exceptionally strong. Since women in this study associated the traditional diet with a sense of helplessness, a lack of choice, and hunger, new foods represent the ability to be satiated, to be free to choose one's diet and to be able to eat for taste. Though women see health as a trade-off, the desire to move away from the experience of hunger and helplessness may directly impact a woman's motivation to adopt a commercially-based diet rather than preserve their traditional diet.

Gendered diets

A final aspect noted by the respondents concerned the difference between male and female diets. Women generally ate more poorly than men. Gender roles within the family had a strong impact on young women's diets in the past. Many women related stories of families reserving what were considered "better" foods, such as wheat and rice, for male and elder family members, while women, especially younger women, were given foods perceived to be inferior, such as mandua and green leaves, which are considered high in energy. Bairavi Devi described this gendered diet:

Young ladies needed more to eat so we gave them more kapala and less of other foods. But for children, men, and elders we gave them the better foods, like rice, and less of kapala. Sometimes if there were leftovers of good food we would eat it. Otherwise, only kapala and depala (Interview, Garhwal, July 2011).

Such patterns suggest that women - especially young women - who bore the greatest work burden in the fields, were given poorer and less desirable foods due to household shortages. Bairavi Devi described this process saying, "*the housewife would serve the men and others first and if there was any leftover then she would eat. If there was not enough food the daughter-in-law would not eat.*" This suggests that women's place in the household hierarchy depended on marital status and age with older women - especially mothers-in-law - having greater access to more desirable foods and having the authority to limit the diets of the younger women within the household.

Women described how this dynamic has changed in the present due to social and infrastructural changes. Respondents recalled that as young women they ate fewer vegetables than they do now because their mothers-in-law restricted their consumption, but now they can eat what they want from the market. As in the sense of freedom from hunger and from the repetition of eating only what was available, access to the foods in the market may also be associated with a social and cultural transformation in which young women's diets are no longer restricted, but bring both freedom from hunger and freedom to choose.

In addition, because women and men have different work roles, women's diets also differed based on their work schedules and activities. As mentioned above, mandua and green leaves were considered high energy foods, appropriate especially for young women who carried out many of the heavy tasks in the field and home. Many women recalled work days when they ate very little, having one or two rotis in the morning, sometimes skipping lunch because they were in the fields or forest all day. In addition, they consumed more on the days

they planned to do heavy work and less on light-work days, skipping breakfast on those days. Women would sometimes bring food to the forest while they worked or would gather wild foods to eat while working. Older respondents recalled days of leaving home for the fields at eight in the morning and not returning until eight in the evening. They did not eat anything during the day, though in the winter they might bring roti with them. Sometimes they would have to travel as far as 20 kilometres in order to gather supplies from the forest, and return this distance carrying heavy loads on an empty stomach.

Finally, women's diet differed due to specific reproductive stages in their lives. Menstruation and pregnancy were specifically singled out for their dietary interruptions. Though many women said that no special foods were given during or after pregnancy because there were no special foods to give, this appears not to have been consistently the case. Bairavi Devi, who served as a midwife in her community for 60 years, gave some insight into some dietary restrictions for pregnant women:

No special dishes were given to pregnant women, but there were some restrictions such as pinnalu (taro), and lal marcha (red amaranth leaf), not restricted by all families, but only in some. For lactating women there were no restricted foods, but sometimes the woman ate something, such as palyo, and the baby had a problem. If there was a problem with bonding between mother and baby then the greens would become restricted, otherwise not. Some green leaves are restricted for lactating women. She also could not eat new wheat flour, and it is also restricted in present times. People think that if new flour is given to lactating women, there may be a serious problem with the baby such as sarola (vomiting and loose motion). Peaches are not restricted, but other fruits such as bedu and timla (both types of figs) are. People give lactating mothers jhangora, mandua and older wheat and mixed roti (Interview, Garhwal, June, 2011).

Anjali and Amita Devi described the specific dietary restrictions for pregnant women, adding also that pregnant women got enough to eat - if there was not enough food others sacrificed in order for the pregnant woman to eat. Also, families provided pregnant women with milk-rich foods, such as khir (prepared by boiling milk and adding either rice or other types of grain), and suggested that she reduce her oil and ghee intake. Immediately after delivery, new mothers were given hot ghee to drink and halwa, a dish made from wheat flour and ghee. They were also restricted from consuming flour milled from the new wheat crop.

Women ate differently in the past due to factors such as gender/power dynamics in the household, gendered work roles, and reproductive health. Young women and daughters-in-law, were not given what were considered "better" foods and infrequently were presented with choices in their diet. Women also experienced hunger when food supplies were insufficient for their families, and when they spent entire days working in the field or forest. Young women, however, were given sufficient, and some richer, foods during pregnancy. Many of these gendered ways of portioning food have changed. Women now eat what they choose and eat enough, and though they may still serve other family members first, most hill families represented in this study reported having a sufficient amount to eat so that young women do not have to go hungry. They can also eat desirable foods such as rice and wheat. These experiences

highlight the relationship between women's work and hunger, of working all day with no food or very little food, and the importance of these experiences in shaping the ways women instigate and adjust to changes in the traditional diet. If the traditional diet is associated with deprivation or hunger, sacrifice for other family members, and/or a burdensome workload, such as recounted here women, the desire and willingness to adapt to a new diet and even seek out new foods may be stronger.

Conclusion

In this investigation women's dietary experience reveal a range of changes. Uttarakhand women reported reducing their dependence on their traditional diet cultivated and harvested from the local environment which was articulated as tastier, fresher, of higher quality and healthier. In its place, a more contemporary commercial diet of processed foods purchased in local markets which they believed to be less healthy, was adopted. This seeming paradox is explained, in part, by the intersection of household and gendered experiences with the traditional diet. Often associated with the traditional diet was a lack of choice, deprivation and hunger, gender role expectations, and reproductive health.

Respondents overwhelmingly felt that the traditional diet was healthier than the current diet which is based more on foods purchased at the market. This is due to the freshness of home-grown food, the healthfulness of the traditional foods themselves, and their medicinal properties. This suggests that Himalayan communities may be at greater risk of negative consequences if the trend towards a dependence on market-based diet continues. Given the traditional diet is perceived to be superior to contemporary market-based diets, we are faced with a challenge for understanding why women would voluntarily adopt a diet they deemed to be healthfully inferior. Our investigation into the motives for the adoption of new foodways suggests women were motivated by factors beyond freshness, quality, and health.

The women also shared experiences of deprivation and hunger that explicitly linked the traditional diet to their gender and ascribed roles within the household. Insufficient food supplies and a lack of food diversity were challenges faced by all residents of middle hills communities, but women experienced this food insecurity and monotony differently than men or children in the household. Household hierarchies stipulated that women – especially younger women - should feed others first, consume less desirable foods, or eat the remains of others only once they had been fed. In times of shortage, women skipped meals, or consumed wild greens harvested in the fields to conserve store-bought or more desirable goods for males in the household.

Many respondents used the word *mazburi*, or helplessness, to describe their feeling towards eating the traditional foods in the past. For many women, the traditional hill diet is now associated with experiences of deprivation, hunger, and the curtailment of dietary choice. These types of hierarchies typical in previous periods are weaker in the present, and, in part, this is due to the greater abundance of food supplies and variety offered by the markets. In this way, women see the market as a liberatory space, freeing them of a monotonous diet and fluctuating food insecurity. Moreover, we can understand these changes in women's views toward diet change, not because of more egalitarian relations in the household, but due to the emergence of new structures and conventions. Specifically, the arrival of new markets and the infusion of

income into the household for purchasing food is largely responsible for women's diet change. From this study it is unclear how transformative gender-based diets within the household would have been without market development and rising incomes. Future research should explore women's current market activity to better understand how markets are used to supplement traditional diets whether through production activity or forging.

This suggests that diet change may be an avenue through which women negotiate power relations. By gravitating toward contemporary food systems instead of traditional ones, women are reconfiguring social practices that excluded them from open and equal access to foods enjoyed by others. Not only does this make visible power relations, but it also contests hierarchies and therefore, is a form of political action. Just as it is now a political act to eat 'local' or 'organic', Himalaya women politicize their everyday consumption by quietly turning toward readily available market-based foodstuffs to offset food insecurity and helplessness that accompany marginalized status in the household. This suggests that it is significant to illuminate the role of memory in women's readiness to choose. Easily accessible memories of deprivation and *mazburi* stifle change.

The growing clamour for more healthful, fresh, locally sourced and less processed diets in the western world, and in India, has reached a fever pitch, but these findings suggest that there are many obstacles for returning to traditional diets based on locally sourced, whole and nutrient-rich foods. Even though the traditional diet of these middle hills Himalayan women possesses many of these highly desirable traits, such as health and freshness, the work needed to produce food is based on a significant female labor, both in the fields and in the kitchen, and are reminders of women's own personal sacrifice and deprivation. Dietary programs which ask one specific group to assume a disproportionate burden for production and preparation of food, and at the same time to suffer deprivation for the benefit of others, is an unsustainable approach to food system development. What is needed is an approach to harnessing the positive attributes of the traditional foods and foodways, while simultaneously ensuring that women - nor any group - is disproportionately burdened with strategies to preserve traditional food systems. As hill community members, researchers, and policy makers plan for the future of sustainable agrifood systems, the protection of traditional foodways must not take precedence over the improvement of women's lives.

We conclude from this exploratory qualitative study that women's experiences with dietary change can yield valuable insights into understanding diet change and the possibilities for improvements into the future. Whereas a great deal of previous research has explored political-economic changes and agro-ecological modifications, we suggest that socio-cultural attributes of foods and foodways is just as pivotal for understanding the meanings of food, their associations and linkages that inform and contour dietary decision-making. Such an understanding of socio-cultural attributes can lead to a more complete understanding of the context in which traditional foods are falling out of favor in the central Himalaya diet.

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ⁱ Agrifood systems refer to the numerous processes involved in transforming raw inputs into consumable edibles. In highly industrialized economies, these processes commonly include, input sector, producing, labor, marketing, processing, transporting, science and technology, governing, consuming, and waste management.