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# FOOD UTILIZATION PRACTICES, BELIEFS AND TABOOS IN NEPAL AN OVERVIEW

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**The Global Health Technical Assistance Project**

1250 Eye St., NW, Suite 1100

Washington, DC 20005

Tel: (202) 521-1900

Fax: (202) 521-1901

[info@ghtechproject.com](mailto:info@ghtechproject.com)

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## ACRONYMS

|         |   |
|---------|---|
| ACC/SCN | (United Nations) Administrative Coordinating Committee/Sub-Committee on Nutrition |
| CBS     | Central Bureau of Statistics  |
| C-IMCI  | Community Integrated Management of Childhood Illnesses                            |
| FCHV    | Female community health volunteers  |
| GoN     | Government of Nepal   |
| IYCF    | Infant and young child feeding  |
| MoAC    | Ministry of Agriculture and Cooperatives  |
| MoHP    | Ministry of Health and Population   |
| MT      | Metric tons   |
| NAGA    | National Assessment and Gap Analysis  |
| NDHS    | Nepal Demographic Health Survey   |
| NLSS    | National Life Standard Survey   |
| NFC     | Nepal Food Corporation  |
| NPCS    | Nutrition Promotion and Consultancy Services                                      |
| ORS     | Oral rehydration solution   |
| SLC     | School Level Certificate  |
| UNICEF  | United Nations Children's Fund  |
| USAID   | United States Agency for International Development                                |
| WFP     | (United Nations) World Food Program   |
| WHO     | World Health Organization   |





## INTRODUCTION

Nepal, though a small country in comparison to its neighbors China and India, is populated by more than 100 ethnic groups speaking almost the same number of languages. Though the country is confined within an area of 141,000 square kilometers, it has one of the most difficult terrains and varied climates ranging from almost tropical in the southern plains to arctic in the Himalayan Mountains. These factors have led to an evolving diversity of habits, practices, and beliefs around food and nutrition that have affected health and nutrition in both positive and negative ways. This overview will look at some of these differing practices to better understand their importance when working on food and nutrition in Nepal.

Since 1975, many surveys have been conducted that examine the nutritional status of children and women in Nepal. All of them found a very high prevalence of undernutrition and nutritional disorders. National Nutrition Strategies, developed in 1978 and 1986, had focused on improved agricultural productivity to improve the availability of food. However, subsequent government nutrition plans identified the need for improved food utilization within households to improve nutritional status. An attempt to develop a National Plan of Action in 2007 identified household food security, child care practices, women's status, and responsive health services as the key determinants of childhood nutrition. The most recent effort has been to conduct a Nutrition Assessment and Gap Analysis (NAGA), a joint effort of the Ministry of Health and Population (MoHP) and donors, including United States Agency for International Development (USAID). One finding in this assessment was the gap in knowledge about various food behaviors, including intra-household food use, diversity of diet, food quality and quantity, breast-feeding, and complementary feeding practices—as well as food handling, hygiene practices, and emergency preparedness and their impact on nutritional status.

In an effort to contribute to the knowledge about food beliefs and practices, this assessment can be considered a resource for a better understanding of how beliefs and practices affect nutrition in communities and Nepal. Available literature on some of the identified topic areas is included in each section with a brief summary. This assessment is by no means an exhaustive analysis of behaviors and culture in Nepal; rather it provides a glimpse into the rich diversity in Nepalese culture as well as its contribution to the nutritional status of women and children.



## **METHODOLOGY**

The team reviewed a number of existing documents, starting from the recently completed NAGA. Additional materials reviewed included the National Demographic and Health Surveys (NDHS), baseline and end-line surveys carried out by different organizations during the course of their work and some publications from academic and research institutions. A review of the literature on practices and beliefs regarding maternal and infant/child nutrition in Nepal, with funding from USAID in 1998, was also referred to wherever relevant.



## TOPIC AREAS

In order to consolidate the variety of practices and beliefs that affect nutrition, the following topics of relevance to maternal and childhood nutrition have been reviewed:

- **Food Production:** The type and quantity of foods produced determine the food practices of the population. It is also important because it has direct relevance to availability of food and household food security.
- **Food Consumption Patterns:** The typical eating pattern of a Nepali household helps to understand the timing and frequency of eating as well as the types of food eaten throughout the day.
- **Caloric Intake of the Population:** The current estimates of calorie intake and their determinants will help to understand the basic degree of inadequacy of nutrition.
- **Intra-Household Food Distribution:** It is important to understand the practices of food distribution among different family members. Some communities are more egalitarian than others when sharing food. How food is distributed among different family members influences the intake and thus the nutritional status of its members.
- **Food Beliefs:** The value accorded to a food item varies according to the food beliefs and other cultural factors. The cultural beliefs will determine whether or not a food is consumed despite its availability.
- **Food Practices of Mothers and Infant and Young Child Feeding (IYCF) Practices, Including During Childhood Illnesses:** Feeding practices during pregnancy and lactation determine the nutritional status of mothers and their children.
- **Undernutrition – Beliefs, Practices, and Treatment:** In many communities where a majority of the children are stunted, undernutrition may not be visible. Understanding perceptions about different grades of undernutrition will help to develop strategic responses to these issues.

## FOOD PRODUCTION

Rice, wheat, maize, millet, and barley are the major cereal crops produced in Nepal. According to the Ministry of Agriculture and Cooperatives (MoAC) press release on May 13, 2010, paddy, maize, wheat, millet and barley contribute 45%, 26%, 24%, 5%, and 1%, respectively, of the total grain production<sup>1</sup>. In areas with irrigated plains and terraced fields, such as in the Terai and Hill valleys, mainly rice and wheat are produced; whereas hills with dry land produce primarily maize and millet. In the fields of the high mountains, the major crops include potatoes, millets, and barley.

The other crops of importance produced in Nepal are sugarcane, oilseeds, potatoes, and pulses. Districts in Terai produce the largest amount of these cash crops. As for other food items, such as milk and dairy products, livestock, and poultry, though showing a gradual increase in recent years, are a relatively smaller proportion of the total food production and thus a smaller part of the diet of the people.

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<sup>1</sup> —“Grain output drops by 4.33%.” *The Kathmandu Post*, May 13, 2010.

Until 1980, Nepal was a food-sufficient country. Since then the population growth rate has surpassed the growth in food production and Nepal has had to import food to feed its population. The Central Bureau of Statistics (CBS) statistics reported a surplus of cereal grain until FY 2003–2004.<sup>2</sup> However, conditions have gradually deteriorated and the latest estimates of the MoAC predict a 4.33% shortfall in grain production in FY 2009–2010. The overall grain output was 8.1 million tons last year and dropped to 7.6 million metric tons this year. Given the increasing population and production ratio, there is likely to be a shortfall of 316,465 metric tons (MT) in food availability this year compared to last year. The estimated food deficit was 132,914 MT. According to MoAC estimates, 1.6 million people will face food unavailability this year. The Mid and Far Western regions will be most affected by food scarcity.<sup>3</sup>

In Nepal, nutritional indicators do not directly correlate with agricultural production. For example, though the Terai region has the highest production of staple crops and has the smallest number in the lowest wealth category, its undernutrition rates are among the highest in the country. In 2006, the Central Terai showed wasting (a severe form of undernutrition) in 20.7% of children, compared to only 6.1% in the Central Mountains.<sup>4</sup> These statistics reinforce the point that the pure availability of food in Nepal does not necessarily provide any guarantee against undernutrition. In order to improve the nutritional status, *both availability of foods and better utilization* through proper distribution and consumption among women and children needs to be prioritized.

## FOOD CONSUMPTION PATTERNS

Based on the pattern of food production, it is clear that the major staples of the Nepali population include rice and wheat in the Terai; maize and millets in the hills; and millet, maize, and barley in the mountains. Potatoes are also an important part of the diet in the mountains. However, in recent years, more food has been imported from outside, resulting in changes in food habits of the people living in the remote hills and mountain districts. In addition, the Government of Nepal (GoN) has been transporting rice and other food items to remote mountain districts since the establishment of Nepal Food Corporation (NFC) in 1974,<sup>5</sup> leading to an increase in rice consumption in those districts.

The typical practice in Nepali households is to have two meals a day with a snack in the afternoon. The mid-morning meals eaten around 9 to 10 a.m. consist of rice or wheat bread or maize bread, or porridge with lentils and vegetables in relatively affluent houses. Those who cannot afford lentils or vegetables eat only one of the items. Roasted maize, beans or wheat, or millet bread constitute the snacks. Those who can afford to keep cattle consume small amounts of milk or buttermilk with their meals. Consuming vegetables is a common practice and it is gradually increasing in some areas. Some communities raise goats, chickens and pigs; however, eating meat even in a relatively well-off family is rare, happening on a weekly basis when possible.

Because of their religious beliefs, some communities and ethnic groups do not eat chicken eggs, chicken, pigs, or buffaloes. For example, Terje Oestgaard,<sup>6</sup> in his study among Brahmans and

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<sup>2</sup> Government of Nepal/National Planning Commission/Central Bureau of Statistics. *Statistical Pocket Book*. Nepal 2006.

<sup>3</sup> —Gain output drops by 4.33%.” *The Kathmandu Post*, May 13, 2010.

<sup>4</sup> GoN/MoHP/New Era/Macro International, USA. *Nepal Demographic and Health Survey 2006*. Kathmandu, Nepal.

<sup>5</sup> Website of Nepal Food Corporation, [www.nfc.org.np](http://www.nfc.org.np)

<sup>6</sup> Oestgaard, T. *Food rituals and Taboos: An Ethno archeological study among Brahmans and Magars of Baglung District, Nepal*.

Magars, observed that though both communities kept buffaloes, Brahmans used them only for their secondary products whereas Magars ate their meat as well. Magars, who did not raise pigs because they considered them messy, did in fact consume pork.

Another example taken from the hills is presented by Gallagher,<sup>7</sup> who reported about the life in a Gurung village in Gorkha district in 1987. This report described the food and agricultural practices in that community. The report may not be considered a description applicable to all the Gurungs in Nepal, yet it gives a good insight into the food practices in a particular Hill community. Gallagher writes:

*—On rising, the villagers eat a snack of roasted pulses and or popped corn. They then depart to gather the first grass of the day for the animals. The women return in time to cook the morning rice meal, which will be eaten any time between 9-11 a.m. The usual grain eaten is corn although millet is widely eaten. Both grains are ground on the stone grindstone and made into coarse flour which is then cooked up to a thick porridge. This flour can also be made into breads. Although the rice is the grain of preference it is not eaten daily by the majority of people. The protein source is usually black gram or soya beans cooked with spices. If a vegetable is available, this will also be eaten with the grain and or green leafy vegetables. If this is not available, the villagers may just eat the main grain flavoured with turmeric along with a protein source. The majority of people drink either water, homemade beer or their own distilled alcohol. A considerable amount of the millet grown and a certain amount of the corn is used by the villagers not as a food, but to make this beer or alcohol. The concentrated beer can be eaten thick as a snack, often this is the way older children eat it or water can be added to make a thick soup like drink. The analysis of the concentrated beer showed rather a higher alcohol content than had been expected and as this beer is given to children, this could have serious implications.”*

These few examples show that there is a diverse set of food consumption patterns depending on the region, caste, and food availability. Furthermore, the use of available products is also very important to understand and could be potentially harmful to a child, for example millet and corn-based alcohol in the Hills. Therefore, programs aimed at improving the nutritional status of women and children will have to consider these diverse consumption patterns in order to inform recommendations on diets depending on the place and population.

## **CALORIC INTAKE OF THE POPULATION**

A significant proportion of the Nepalese population consume less than adequate calories as reported by CBS on the basis of National Life Standard Survey (NLSS) 2003-2004 and Small Area Estimation of Poverty.<sup>8</sup> The prevalence of inadequate caloric intake varies from 35.2% to 39.8% of the adult population in Nepal. The calorie requirement was estimated at 2709 Kcal/day required sustaining moderate activity. The estimates were calculated on the basis of reported expenditure on food. The prevalence of inadequate caloric intake levels is highest for the regions with the lowest food production: Midwestern and Far Western regions have a prevalence of inadequate caloric intake higher by 7% to 8% compared to the national averages.

There is no relationship between food availability and calorie intake in urban areas: availability is higher than in many rural areas, yet the prevalence of inadequate caloric intake was found to be the highest for urban Kathmandu. This could be due to the methodology used, which calculates

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<sup>7</sup> Gallagher, C. M. *An overview of life in a Gurung Village in Gorkha district*. 1987.

<sup>8</sup> GoN/NPC/CBS/WFP. *Small Area Estimation of Poverty, Caloric Intake and Malnutrition in Nepal*. Kathmandu, Nepal, 2006.

calorie intake on the basis of amount of money spent to buy food. The NLSS 2003-2004 also found that the people in the wealthiest category spent almost double the amount of money per 1000 kcal (Rs. 5.5 vs. Rs.11.4 per 1000 kcal). This observation calls for programs to include educational approaches to improve budget management for food expenditures. Aside from this study, a number of more rigorous researches also have also shown inadequate calorie consumption prevalent among the Nepalese people.

Except for one study,<sup>9</sup> which had reported higher than required calorie intake by adolescents in two of three study sites, most of the studies confirm the assumption that the calorie intake among a significant proportion of Nepalese population is inadequate.

A study conducted in the Southeastern part (Terai district) of Nepal among those attending immunization services for JE vaccine<sup>10</sup> found that the usual daily diet in the research area consisted of morning tea with milk and two meals a day: primarily of boiled rice, pulse soup, stew with potato, and vegetable and salt-pickled vegetable with seasonings. The total weight of food consumed per day amounted to 1169 and 1044g for males and females respectively. About 39% of total consumed weight came from cereal, of which rice accounted for about 86%. Rice was the staple food with a daily mean consumption of 378 and 374g for males and females respectively. The average energy intake was 2427 and 2275 calories for males and females respectively.

Another research study<sup>11</sup> which looked at consumption patterns of people living in Kathmandu valley was conducted in 1997. The study of male tempo drivers and female carpet weavers, found that these groups consumed mainly rice, potatoes, meats, milk and dairy products, and vegetables. The researchers found that the amounts of food consumed by both sexes—especially the females—were mostly insufficient. Both males and females had an energy intake lower than that of estimated requirements and than that in the Terai region. The reasons for lower intake were not provided in this document.

Another study<sup>12</sup> conducted in Nawalparasi, a Western Terai district, looked into the gender differences in dietary intake among adults of a Hindu community. The average energy intake for both males and females was less than adequate (Males: 2068 kcals/day, Females: 1789 kcals/day). The food consumed consisted mainly of rice, potatoes, vegetable curries, and dal soup. Meat and fish curries were less frequently consumed, and these less frequently consumed foods were eaten more by males. This study also supported the assumption that the females are at a disadvantage regarding caloric intake.

## **INTRA-HOUSEHOLD FOOD DISTRIBUTION**

Households' access to available food is a less important determinant of nutritional status than how food is distributed among members of households, particularly children and women. There are not many studies reporting on this aspect of food utilization from Nepal. However, the available studies point to a hierarchy existing in the distribution of food within households that is

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<sup>9</sup> Regmi, S. and R. Adhikari. *A study of factors influencing the nutritional status of adolescent girls in Nepal*. ICRW, Washington DC, May 1994.

<sup>10</sup> Hirai, K. and J. Nayakama. —Food consumption and nutrient intake and their relationship among Nepalese.” *American Journal of Clinical Nutrition*. 1988.

<sup>11</sup> Ohno, Y. and K. Hirai. —Food consumption and serum nutritional status of people living in Kathmandu.” *Environmental Health and Preventive Medicine*, Vol. 10, No. 2. Springer Japan, March 2005.

<sup>12</sup> Sudo, N., M. Sekiyama, M. Maharjan, and R. Ohtuska. —Gender differences in dietary intake among adults of Hindu community in lowland Nepal: Assessment of portion sizes and food consumption frequencies,” *European Journal of Clinical Nutrition*, Vol. 60:469–477, 2006.



detrimental to women's food intake. Similarly, children sharing a food plate with a male or female member of the family have a different intake of micronutrients.

Gittelsohn J,<sup>13</sup> examined intra-household food behaviors in six villages in a rural Hill area of Mid Western Nepal. Qualitative and quantitative methods were used to collect data on food belief systems, household allocation of food resources and the effects of these features on diet and anthropometric status in a sample of 767 individuals in 115 households. The results document a variety of mechanisms by which some individuals are favoured over others through household food distribution. This includes serving order, serving method, refusing to serve foods, channeling foods, and distributing low-status food for higher-status foods. No differences were observed in mechanisms of food distribution or nutrient intake between male and female children, contrary to the evidence in the literature suggesting that male children will be favoured. On the other hand, adult women were less likely to meet their nutrient requirement for energy, beta-carotene, riboflavin and vitamin C than men of the same age. Women's late position in household serving order, channeling of special foods to males and children, and lower intake of foods accounts for these findings.

How a child is served food also seems to influence the intake. A case control study, by Shankar A.V., Gittlesohn J., West Jr., K.P. et al<sup>14</sup>, evaluated the relationship between shared plate eating behaviors in young Nepali children (aged 1–6 years) and the risk of vitamin A deficiency. Day-long observations of dietary practices were conducted for seven days over a 15-month period in 162 households. Eighty-one households with a child with a known history of mild xerophthalmia (cases) were matched with 81 having a non-xerophthalmic child of similar age (controls). Shared-plate eating occurred in 25% of all feeding episodes, and at least once in 65% of all days observed. Overall, children engaged in shared-plate eating were significantly more likely to consume grains, vegetables, carotenoid-rich vegetables, pulses, fruits, meats and fish, and dairy products, compared with children who ate alone. In general, feeding behaviors between case and control children tended to be similar. However, shared-plate feeding episodes among case children were significantly less likely to include meats or fish dairy products or pulses. Individual plate feeding episodes among case children were more likely to include vegetables than those of control children. Case children were more likely to share a plate with a male adult, but less likely to eat from a plate shared with females of any age compared with controls. Shared-plate feeding may benefit a young child's dietary intake, but the identity of the food sharer may modify this influence.

These two examples show that the amount of food available within one household is no guarantee that women and children will have adequate consumption and meet their dietary needs. The lower position of women in the hierarchy of access to food seems to influence women's eating practices. For children, this hierarchy also influences their intake, depending on the hierarchy of whom the food is shared with during eating times.

Though these are just few small examples, their implication in understanding how culture influences food consumption is critical. Communication strategies aimed at improving maternal and child nutrition will have to show awareness of such realities at the household level.

Any assessment of food behaviors in a program area will have to design tools and programs that address these inequities in access to food.

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<sup>13</sup> Gittelsohn, J. —Opening the box: Intra-household food distribution in rural Nepal.” *Social Science and Medicine*, Vol. 33(10): 1141–1154, 1991.

<sup>14</sup> Shankar, A. V., J. Gittelsohn J., K. P. West Jr., R. Stallings, T. Gnyawali, and F. Faruque. —Eatig from a shared plate affects food consumption in Vitamin A deficient Nepali children.” *The Journal of Nutrition*, 128(7):1127–1133, 1998.

## FOOD BELIEFS

*Culture has a strong impact on the food behavior of people. The food, habits and practices are closely related to the typical behavior of a particular group of people or culture. Such behaviour follows codes of conduct in relation to food choice, methods of food preparation and eating, number of meals eaten per day, time of eating, and the size of the portion eaten.*<sup>15</sup>

A focus group discussion about fruit and vegetable consumption patterns was carried out by N. Khadka<sup>16</sup> in three villages, two in the Hills and one in a Terai village. The villagers at all three sites contend that “no one has to teach them to eat fruit and vegetables as they eat them during their seasons.” Similarly, vegetables were regarded as a part of their meals but were eaten “for they add taste to meals.”

Field observations demonstrate villagers’ beliefs in *superior* or *inferior* foods. Wildly growing vitamin A rich leafy vegetables such as stinging nettles, amaranths, and garlic pear are all considered inferior foods and, when it is suggested that eating them will provide Vitamin A, almost all the students in a school reacted negatively. Such foods are considered fit for very poor people. Most of the villagers in the study area agree with the suggestion that nutrition education is necessary to help the villagers make proper use of locally and wildly available foods with an understanding of their role in nutrition. An exploratory study<sup>17</sup> based on a literature review and interview with housewives from rural areas of Kathmandu and Patan and teachers of a women’s college reported on the food beliefs of the people. The study found that the people hold the beliefs about *pure* and *impure* food; *hot*, *cold*, and *neutral* foods; *beneficial* or *harmful* foods; or *curative* foods. However, there was no consensus about the nature of a food items across the different groups. Such beliefs seem to be carried on apparently without any logic. It is important to understand these beliefs and their sources before any advice regarding their use can be commented upon.

## FOOD PRACTICES OF MOTHERS AND IYCF PRACTICES

A large number of studies and surveys conducted in Nepal with a focus on maternal and child health have collected information on this aspect of nutrition. A review by J Singh<sup>18</sup> in 1998 summarized findings from such studies up through 1997 as follows:

- Many believe that pregnancy is a natural condition that does not need any particular attention.
- Any special treatment of mothers tends to be for the protection of the unborn child rather than for her own health and well being.
- One widely held belief is that if a woman eats more during pregnancy she will have a bigger baby which can cause problems during labour.
- Foods of animal sources are considered good for pregnant women.

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<sup>15</sup> Barasi, E. and R. F. Mottram. *Human Nutrition*, London, Edward Arnold, 1990.

<sup>16</sup> Khadka, N. B. —Culture: A dynamic process of social behaviour,” *International Journal of Language, Society and Culture*, 2000.

<sup>17</sup> Shakya, M. —Traditional Food and Health Beliefs,” in *Education for Development*, Tribhuvan University, Kathmandu, 2006.

<sup>18</sup> Singh, J. *A review of the literature on practices and beliefs regarding maternal and infant/child nutrition in Nepal*. Kathmandu Academy for Educational Development, June 1998.

- Social factors also influence the diet of pregnant women: women and girls usually eat after male members and children have eaten and have less access to food from animal sources and other special foods.
- Mothers who have recently delivered a baby are considered impure and are not allowed to eat with other family members until the purification ceremony has been held. In some communities, mothers' food intake is limited during this period.
- Women in mid and far western hill regions practice a system in which the recently delivered women are kept in the cowshed outside their homes in very unhygienic conditions.
- In some cultures, it is believed that a connection between stomach and womb exists and womb and stomach are rested together by not giving food to the mothers.
- Ghee, meat, and milk are considered good for new mothers for breast-feeding. However, for mothers in many families, the diet for lactating mother is the usual family diet because they can't afford different foods.
- The diet for a lactating mother is further restricted when her baby is ill.

The review also summarized findings about infant and child feeding practices as follows:

- Almost all babies are breast-fed. Some are exclusively breast-fed for a period beyond the recommended six months of age. Giving pre-lacteal feeds, not giving colostrums, prolonged exclusive breast-feeding beyond six months of age, starting complementary feeds before six months old are some of the problems identified by the review. Most babies are breast-fed up to two years old as recommended, but some go beyond this age.
- The period of exclusive breast-feeding is shorter than four or six months and it is more so in the hills. Many mothers give liquids or solids within a few months of birth. Some babies are fed complementary foods earlier than the recommended age because mothers have to go to work. Some mothers start early complementary feeding because they think their breast milk is not sufficient. However, there are some mothers who feel that the breast milk alone is sufficient in the first year of life and infants should be given solid food once they show interest in it.
- The majority of mothers breast-fed their babies on demand; however, it is not always possible to practice demand feeding as they have to leave the babies for work. In such cases, alternative feedings are given.
- The reasons for stopping breast-feeding include pregnancy, work commitments, and the mothers' sickness.
- The complementary feeding for infants and young children is mostly infrequent and unsupervised. Infants and children suffer both from indulgence and neglect in their feeding. The children are allowed to eat what they want, but are not encouraged to eat if they don't want to.
- Some babies start solid foods after the rice feeding ceremony at five or six months. Many children are given a family diet without any special preparation. If the infants or children don't show any interest in solid foods, mothers may not persevere with feeding the infants.
- The complementary foods generally lack variety: they are often based on rice and dal. Meat, fish, or eggs are infrequently given to the children.

- Some food items like green leafy vegetables are considered cold and are not given to infants or children.
- Constraints to appropriate and adequate infant and child feeding include maternal malnutrition; seasonal food insufficiency, mostly during monsoon; and maternal workload.

More recent research done in Nepal has come to similar conclusions concerning child feeding practices. Dr. Sushila Malla<sup>19</sup> conducted a study in three districts in Kathmandu Valley among mainly Brahmin/Chhetris in Kathmandu and Lalitpur, and primarily among Newars in Bhaktapur. Published in 2002, the study reported a very high percentage of mothers starting on breast-feeding, but a large number of mothers—mostly from Newar community—not feeding colostrums to their newborns. In Nepal, many families practice what is known as a *traditional rice feeding ceremony*<sup>20</sup> at the age of five to eight months (five or seven months for girls and six to eight months for boys). The rice feeding ceremony was practiced by almost all the families surveyed; however, three fourths of the mothers were introducing complementary foods earlier than six months. Most of the mothers fed traditional, cereal-based foods, which lacked essential nutrients. Most of the mothers were convinced that the traditional cereal-based complementary foods were nutritious for their babies. It was observed that the traditional complementary foods were cheaper than commercially available ones. Mothers in the Kathmandu valley supplemented the traditional foods with commercial infant foods in more than 80% of the cases. The child's taste was the main determinant of the selection of the commercial infant food. Except in a few cases of commercial foods, there was no practice of fortifying complementary food with micronutrients.

Using 24-hour dietary recall, the study concluded that the children were receiving less than the estimated requirement of different nutrients. The frequency of feeding was also insufficient. The commercially available complementary foods did not have any labels, and no date of manufacture and expiry or nutrient content could be found on them. Mothers employed out of home were found taking their children to their workplace; however, the affect of this on infant feeding was not reported in the study.

Similar patterns have been reported by a study conducted by Nutrition Promotion and Consultancy Services (NPCS) in Tanahun (a hill district in Western Nepal).<sup>21</sup> Breast-feeding was universal and the majority of infants and young children continue to breast-feed until the third year of life. Infants less than five months old were seldom fed staple foods (mainly cereals), and buffalo's milk was given to children beyond six months of age. Cereals constituted the main staple food: steamed or beaten rice; thin or thick porridge made of rice, maize, millet, and wheat were fed to the infants and young children, with or without pulses. Rice was the most frequently fed cereal. Potatoes, yam, radish, and colocasia roots were consumed, and children were given potatoes most of the time. Meat, fish, and eggs were rarely fed to children. Pulses were given more frequently to children above 24 months old than those less than eight months. Green leafy vegetables were seldom given to the children. Similarly, children seldom received other vegetables and fruits. The study also considered the frequency of eating and type of food eaten by mothers. Nutritious foods such as pulses, milk products, meat/fish/eggs, green leafy vegetables, vegetables, and fruits were missing from the diet of mothers. Their food consisted of cereals—mainly rice—and some pulses.

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<sup>19</sup> Malla, S. *Child Complementary Feeding in Urban Areas of Nepal*. Udaya Books, Kathmandu, Nepal, 2002.

<sup>20</sup> Nidhi, S. K. "Weaning Practices in Nepal," in *Footsteps*, 52, December 2005.

<sup>21</sup> Nutrition Promotion and Consultancy Services. *Impact Evaluation of Community Nutrition Project*. Tanahun, NPCS, Thapathali, Kathmandu, Nepal, 2005.

Another survey,<sup>22</sup> conducted by NPCS in two other districts (one Hill and one Terai district of central region), found that the reported feeding practices were inadequate. These observations were based on a 24-hour food recall carried out for children, their mothers and female community health volunteers (FCHVs). Mothers and FCHVs consumed cereal-based staples once a day and most children were started on cereal-based foods around seven months old. Pulses were consumed less frequently by all the groups: children, mothers, and FCHVs. Similarly, meat/fish/eggs or milk products and vegetables and fruits were not frequently consumed by any of these groups. These findings were similar to those in the Hill district with lower production of staple cereals than in the central Terai where paddy and wheat production is the highest in the country.

## **UNDERNUTRITION — BELIEFS, PRACTICES AND TREATMENT**

In communities where more than 50% of children are stunted and almost 40% are underweight, it is unrealistic to expect that mild and moderate forms of undernutrition would be recognized as problems. The tendency of moderately undernourished children to be whining most of the time has led to them being termed as suffering from *runche*, meaning a crying child. The causes of *runche* are listed as evil spirits or being touched by pregnant women. Parents or communities do not typically associate any relationship between inadequate feeding and *runche*.<sup>23</sup> Early morning ritual baths are one of the treatments suggested for this condition. However, such beliefs are prevalent in and around Kathmandu valley and cannot be generalized for the whole country.

Singh had reviewed the literature up to 1998 and used terms like *sato gayeko* or *runche* for children suffering from undernutrition. *Sukenas*, meaning drying up, is used for children suffering from marasmus, and *phukenas* for children suffering from kwashiorkor. However, their relation to inadequate or inappropriate feeding is not clearly understood<sup>17</sup>.

Care-seeking behavior during common childhood illnesses is an important determinant of nutritional status. Early recognition that a child is sick and the practice of taking a sick child for care is encouraged through the approach known as Community Integrated Management of Childhood Illnesses (C-IMCI). This approach has been scaled up to a national level at both facility and community levels. An evaluation of a Child Survival Project in four districts of the Far Western Region collected information on care practices during diarrheal episodes of children. The baseline and end line surveys were carried out in 2003 and 2007. The report consistently showed that about one third of children (27–32%) were given more fluids during diarrhea and that the percentage of children who received more food was even lower at 13–26%. NDHS 2001 had also reported a similar finding: only 27% were given more fluids and only 6% received more food during diarrhea. The NDHS 2006 also collected information on this aspect of child care. The practice of giving less food during diarrhea has persisted even in the NDHS 2006.

Information regarding feeding during illnesses is available for children suffering from diarrhea. IYCF practices encourage mothers to continue feeding and give more fluids during diarrhea. NDHS 2006 reported that the majority (59%) of mothers give the same amount of food during episodes of diarrhea, 24% give less than the usual amount of food, and only 6% had increased the feeding. Children between 24–35 months old were more likely to be given oral rehydration solution (ORS) and fed normally.

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<sup>22</sup> Nutrition Promotion and Consultancy Services. *Capacity Building of Health Workers for Nutrition Support in Nepal*. NPCS, Thapathali, Kathmandu, Nepal, 2007.

<sup>23</sup> Adhikari, R. K. and M. Krantz. *Child Nutrition and Health 2<sup>nd</sup> Edition*. Health Learning Materials Centre, Kathmandu, Nepal, 1977.

This information would have implications for nutrition programs. Specific questions regarding feeding of a sick child and counseling for correct behavior in this area should be an integral part of integrated nutrition programs.

## **QUANTITATIVE INFORMATION ON SELECTED CHILD AND MATERNAL FEEDING PRACTICES**

NDHS 2006 recorded information related to infant and child feeding and maternal intake of food with micronutrients (Vitamin A and iron). This is the only source that provides information on practices according to place of residence, education, and economic status. The observations about these variables are as follows:

### **BREAST-FEEDING**

Breast-feeding is the most favored method of feeding newborn infants and children in Nepal. It is almost universal during the newborn period. However, according to NDHS 2006, only about 35% of infants initiated breast-feeding within one hour of birth, though it increased to 85% within one day of birth nationwide. The percentage of those who initiated breast-feeding within one hour ranged from 21.9% in western Terai to 63.3% in Far Western Terai. This figure was higher than average for the infants of mothers with some secondary education (41%) and with a School Level Certificate (SLC) or above education (47.2%). Again this behavior was demonstrated by more mothers in the highest wealth quintile compared to lowest (41.2% vs. 29.8%). However, this trend did not persist for those who started their infants on breast-feeding within one day of birth.

### **PRE-LACTEAL FEEDS**

Mothers are counseled to breast-feed their newborns as soon as possible and not to give anything than breastmilk for the first six months. Yet, NDHS reported that more than 35% of mothers gave prelacteal feeds to their newborns, ranging from 4.3% in Mid Western Hills to 75.7% in Central Terai. There was no difference in this behavior with regards to educational level, but it was almost double among mothers in the highest wealth quintile compared to the lowest (33.2% vs. 17.4%).

### **DURATION AND FREQUENCY OF BREAST-FEEDING**

It is a common practice to continue to breast-feed children for a longer period of time. In many cases this may be the only food that children receive, to the detriment of their nutritional status. It may also interfere with timely and appropriate complementary feeding. The mean duration of breast-feeding was noted as 30 months; male children were breast-fed for a longer period than the females. The median duration of breast-feeding is 34 months; it was higher for children living in the Western Mountain, Western Hill, Mid-Western Hill, Mid-Western Terai, and Far Eastern Terai sub regions. Children of mothers with some secondary and higher level of education were breast-fed for a shorter period of time than children of mothers with no or primary education. The majority of children were breast-fed six or more times in the previous 24 hours.

### **BREAST-FEEDING STATUS AT DIFFERENT AGES**

Only slightly more than half (53%) of the infants under six months old were exclusively breast-fed, contrary to the promotion of exclusive breast-feeding for six months by the government nutrition programs. Mothers of children less than six months old with a higher level of education were less likely to exclusively breast-feed: only one in three mothers with secondary level or higher education did so. For mothers with no or primary education, two out of three exclusively breast-fed their babies for six months. In addition, mothers in the lowest wealth quintile were more likely to exclusively breast-feed than the mothers in the highest wealth quintile (67% and 38% respectively).

## **TYPES OF COMPLEMENTARY FOOD**

Almost three children out of five (58.4%) were reported consuming solid food by 6–7 months of age. About a quarter of infants had started on solid food by 4–5 months old. The introduction of liquids was reported to be much earlier. By 6–9 months of age, children are more likely to receive foods made from grains (71%) than other types of solids or semisolid foods. Only about 20% of children in the six-to-nine-month age group received Vitamin A rich food and vegetables. Only about one in ten children consumed meat, fish, or eggs around 6–9 months old. Babies are given milk other than breast milk most commonly around 12–15 months old.

## **COMPLEMENTARY FEEDING OF INFANTS AND YOUNG CHILDREN**

IYCF practices guidelines promoted by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend feeding an average healthy child in the following way: continued breast-feeding, solid/semi-solid foods 2–3 times for infants 6–9 months old and 3–4 times for infants 9–24 months old, with an additional snack being offered 1–2 times per day. The minimum IYCF practices for children 6–23 months are defined as continued breast-feeding, feeding at least the minimum number of times per day, and feeding from minimum number of food groups per day. The criteria for non breast-fed children include feeding substitutes of breast milk (infant formula, powdered or fresh animal milk, cheese, yogurt and other milk products). According to NDHS 2006, 57% of children are fed according to recommended IYCF practices. Nearly all children 6–23 months old are breast-fed or given milk products, about 60% are given the recommended number of foods (food from three or more groups for breast-fed children), and more than 80% are fed at least as often as recommended. These findings indicate that male children, children in urban areas, children with mothers with some secondary or higher education, and children in the highest wealth quintile were more likely than other children to be fed according to recommendations. Feeding practices in the Western Hills and the Western development region were better than the rest.

## **FOODS CONSUMED BY MOTHERS**

Cereal grains, roots and tubers, and legumes were the most frequently-eaten food items of mothers. There was no difference in the consumption of cereal grains across all the regions, whereas tubers and roots formed part of maternal diets less often in the Mid Western and Western development regions. Similarly, consumption of pulses and legumes was less for mothers in the Central and Mid Western region. Consumption of pulses was lower in the Central and Far Western regions compared to the national averages. Overall, only 30% of mothers reported consuming meat/fish/eggs nationwide. This figure was lowest at 25% in the far western region and for mothers with no education and in the lowest wealth quintile. Consumption of milk was higher for mothers with some secondary and higher education compared to mothers with no education or primary education and for mothers in the highest wealth quintile. Maternal food consumption shows a distinct variation according to the place of residence, education, and economic status.

## **VITAMIN A INTAKE AMONG CHILDREN**

According to NDHS 2006, 64% of children 6–35 months old consumed vitamin A rich food in the 24-hour period preceding the survey. Urban children and children living in the hills were reported to have vitamin A rich food more frequently than rural children living in other ecological zones. Children born to mothers with an SLC and higher level of education were more likely to have received foods rich in vitamin A than children born to mothers with a primary education. Children living in the wealthiest households were much more likely to consume vitamin A rich foods.



### **IRON INTAKE AMONG CHILDREN**

Twenty four percent of children were reported to consume iron-rich food according to NDHS 2006. The consumption of iron-rich food was found more among children of older mothers living in urban areas. Children living in the central and western hills were reported to consume more iron-rich food than the national averages.

### **VITAMIN A INTAKE AMONG MOTHERS**

More than 75% of mothers were reported to have consumed vitamin A rich food in the past 24 hours according to NDHS 2006. Consumption of vitamin A rich food was higher among mothers in urban areas, in hilly regions with more education, and in the highest wealth quintile.

### **IRON INTAKE AMONG MOTHERS**

Consumption of iron-rich food also showed a similar pattern. Though only 30% of mothers were reported to have consumed iron-rich food nationwide, mothers from urban areas and hilly regions with primary and above education, and from the highest wealth quintile, were reported to have consumed iron-rich foods.

It is repeatedly observed that IYCF practices are inadequate and inappropriate. Programs aiming at improving the nutritional status of mothers and children will have to consider the best communication approaches that could contribute to a positive change in these behaviors.



## **IMPLICATION OF THESE FINDINGS FOR NUTRITION PROGRAM**

### **FOOD PRODUCTION AND AVAILABILITY**

The literature review revealed that there are very few studies that describe the food consumption pattern of the general population and their variations according to regions, districts, and communities. One would assume that locally-produced foods are the staple for the local population in a given area. However, with government subsidies for transportation or food to remote mountain districts, there has been a change in eating habits. Following the introduction of these government provisions, people have started to consume food not grown in their native area. There are frequent reports of chronic shortages of such subsidized food in food-deficit areas. It is essential that the implementers of nutrition programs in a community remain sensitive to this aspect of food availability. How food imports influence the local food production and their impact on food consumption patterns will be an important subject of formative research.

### **CALORIE INTAKE**

The finding that almost two in five Nepalese consume less than adequate calories is a matter of great concern. Though the study has certain methodological questions, small-scale studies also have consistently supported this observation. The observation that people with more money spend more for the same amount of calories and that urban populations suffer more from calorie inadequacy indicates that educational programs to promote budgetary management of food will help the population consume sufficient calories at a lower cost. Designers and implementers of nutrition programs will have to collect related information through formative research in order to identify a correct approach to handling this issue.

### **INTRA-HOUSEHOLD FOOD DISTRIBUTION**

Undesirable practices within households that promote hierarchy in the distribution of food have emerged as an important observation. It indicates a cultural practice with a detrimental effect on maternal nutrition. How widespread is the practice? How important is its role in a program area where nutrition programs are being implemented? These questions would have to be a part of the formative research that must precede communication approaches that could promote desirable nutritional practices.

### **CHILD PLATE SHARING WITH ADULTS**

The practice of feeding children less when they share from the same plate as an adult was reported to be common in an area where xerophthalmia was a public health problem. The practice was found to contribute to poor intake of micronutrients if the child was sharing a food plate with an adult male. Who feeds children and how they are served could be a determinant of adequacy or inadequacy of intake of essential nutrients. Methods used by the researchers could be helpful in designing the assessment of such practices in communities where new programs are implemented

### **BREAST-FEEDING**

Though breast-feeding is universal, the percentage of mothers exclusively breast-feeding their children for a desired period seems to be declining. It is more alarming to see that educated mothers, and those in the richest quintile, tend to exclusively breast-feed their children less than others. Similarly, the practice of giving pre-lacteal feeds seems higher among women in the highest wealth quintile. What approaches can be developed to mitigate these negative trends? Why do the educated, and those who can afford alternatives, seem to opt for less optimal

infant feeding practices? A nutrition program will have to find the answers to these questions in the context of each community because it is difficult to identify one reason applicable to all the communities and regions.

### **MATERNAL NUTRITION DURING PREGNANCY**

Most studies have repeatedly demonstrated that mothers consume less food than other members of the household, particularly during pregnancy. Some communities seem to have some beneficial practices of gifting nutritious food to their daughters in pregnancy, but such practices do not meet the extra dietary needs during pregnancy. Lower hierarchy when it comes to food distribution, less access to food of animal origin, and taboos among certain ethnic groups all act against mothers consuming appropriate and adequate food during pregnancy. Past studies have identified the tendency of “eating down” or eating less during pregnancy in order to have an easy delivery. Is this an important consideration in a community where a nutrition program is being implemented? Should it be addressed through behavior change communication? If so, how should the concerns of mothers worried about an obstructed, difficult labor be addressed through improved delivery services? These could be the questions for designers of new nutrition programs.

### **MATERNAL NUTRITION DURING LACTATION**

Certain taboos against *cold* foods, such as green leafy vegetables, and poor access to food of animal origin work against proper feeding during lactation. Most of the studies on micronutrient intake have shown that it is inadequate during lactation. Programs addressing maternal nutrition will have to gather community-specific information in order to design specific interventions for this group.

### **RECOGNITION OF UNDERNUTRITION AND ITS CAUSES**

There have not been many studies that have enquired into community perceptions on undernutrition. What do people think about the size of their children? Are they concerned about this? Do they see the link between weight and the pattern of increase in weight, and the frequency of falling sick? Are they aware that appropriate growth and cognitive development are linked to increased productivity in later life? In order to succeed, nutrition programs will have to work with community members who are convinced that the goal of improving nutrition is a worthwhile activity with long-term benefits. Advocacy that demonstrates the undesirable status of their children’s nutrition could be the entry point for a nutrition intervention. Collection of information on nutritional status through anthropometric assessment, including pictorial comparison of the weight and height of children of the same age, would be one of the approaches for advocacy.

### **FEEDING DURING CHILDHOOD ILLNESSES**

The review revealed that feeding during illnesses receive insufficient or no attention during common childhood illnesses such as diarrhea and acute respiratory infections. What are people’s perceptions about feeding during illnesses? Which food seems acceptable in a particular illness? There are strong feelings about the do’s and don’ts when it comes to feeding a sick child. Again, there is no uniformity in these practices. In her review, Singh reported that the same food was considered good in one locality and bad in another locality. This diversity in beliefs needs to be studied and messages developed to promote beneficial practices and prevent harmful behaviors.

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