

Food and nutrition situation in Northern Areas - a survey

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Northern Areas of Pakistan comprise the three districts of Gilgit, Baltistan and Diamer, covering an area of 27,118 sq. miles and are situated in the Karakoram range of Himalayas. The region is located at an altitude ranging between 3,000 and 28,250 feet above sea level. The climate is extremely cold in winter and temperate in summer. The Northern Areas have vast reserves of mineral wealth such as rubies, found in Hunza. The other important minerals include copper, mica, lead pyrite, marble, alum and some radioactive materials. According to 1981 Census, the population of these areas is 5.7 lakh. About five percent of the population is literate.

FOOD PRODUCTION

About six percent of the total area is under cultivation while the remaining is covered by thinly scattered forest which provides timber and support to over one million heads of livestock. About 80 percent of the cultivated area is under food-

grains and other arable crops while the remaining 20 percent is under fruits. The food production is insufficient to meet the requirements of the population and the deficit is met by the imports of foodgrains from other parts of the country.

The common crops grown in the areas are wheat, millet, maize, barley, beans, common pulses, vegetables (cabbage, cauliflower, green peas, spinach, potatoes, etc). The areas are rich in fruits such as almonds, apples, apricots, grapes, peaches, plums, mulberry and walnut. Apricots and mulberry are dried and stored for consumption during winter. Apricot stones are used for extraction of oil used in cooking.

FOOD CONSUMPTION

The food intake as reported by the Nutrition Survey of Northern Areas, conducted by Dr. S. M. Ali and Dr. M. Akmal Khan, is given in Table 1.

Cereals constitute the main staple of the diet and contribute 85 percent of the total caloric

intake. Wheat flour is often mixed with other cereals, apricot flour and oilseed flour. The consumption of fat is low. Similarly, the intake of protein-rich foods, pulses, milk and meat are very low. The main feature of the diet of people is their high consumption of leafy vegetables and fruits. The consumption of foods of animal origin was found to be very low. Intake of egg is negligible while fish is not consumed at all. The per capita meat consumption is 2.5 g per day. People usually eat

Table 1. Food intake per person per day

Food group	Quantity (gm)
Cereals (wheat, maize, barley)	425.0
Pulses	3.6
Strachy roots	12.5
Vegetables	201.6
Meat	2.5
Eggs	0.3
Milk	102.0
Fats and oils	12.8
Fruits	186.0
Sugar	4.3

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meat during winter when it is difficult to grow anything. The per caput consumption of milk is 102 g per day. Most of it is consumed in tea and very little is given to the children. Tea is a popular drink and is usually taken with bread. Since sugar is in short supply, tea is usually taken with salt. In some areas e.g. Skardu, *ghee* is mixed with tea in place of milk.

Per caput intakes of calories and protein are 2150 kcal and 67 g, respectively. The energy requirement of Pakistani adult male and female are 2550 and 1850 calories per day, respectively. People (male) of Northern Areas are taking 84 percent of their required caloric intake. The recommended protein allowances based on FAO/WHO/UNU (1981) recommendations for Pakistani population is 62 g/head/day. The average consumption of protein in Northern Areas is higher than the recommended dietary allowance. However, such diets having adequate protein but low in calories may burn protein to meet the caloric requirement of the body. Under these conditions, the human body can develop metabolic adaptations to low dietary intake. Such adaptation may help to explain how adult human beings appear to maintain health on dietary intake well below the established physiological requirements.

Fats and oils provide energy to the body and as long as other sources of energy are supplied in adequate amounts in the diet, it is hardly needed. However, for

absorption of fat soluble vitamins and for adequate supply of essential fatty acids, it is generally recommended that fat should contribute at least 20 percent of the total calories. Fat calories constitute 12 percent of the total calories intake of people in Northern Areas. But in spite of such low intake, no clear case of vitamin A and D deficiency was observed. The essential fatty acids contribute 1-2 percent of the total calories in a balanced diet. The Northern Areas' diet is adequate in essential fatty acids to meet the dietary requirements and provides 2.3 percent of the total calories.

The average intake of iron is 28.7 mg per head per day, and is adequate to meet the recommended allowance of 20-30 mg. In spite of adequate intake of iron, prevalence of anaemia in the population has been reported. The Northern Areas' diet provides adequate amount of Vitamin A Thiamine, Niacin and Vitamin C to meet the dietary requirements. However, some cases of riboflavin deficiency particularly in children in Skardu were reported.

PROTEIN QUALITY OF DIET

The quality of dietary protein depends on its capacity to supply the essential amino acids in the proportion the body requires. The first limiting amino acid in the Northern Areas' diet is lysine. The true protein digestibility (TD) and net protein utilisation (NPU) of the diet are 88 and 61 percent, respectively as compared to 92 and 66

percent of the Pakistanis' diet. According to FAO/WHO, the protein allowances for different age groups in terms of net dietary protein calorie percent (NDP cal%) are 8.0, 7.8, 5.9, 8.4, 4.6 and 9.5 for infants, toddlers, children (4-9 years) adolescents, adults and lactating mothers, respectively. The NDP cal% value of Northern Areas' diet is 7.6 and is adequate only for adults and children (4-9 years). It appears that protein is not a limiting factor in the diet. There is strong evidence that the food problems in this area from the standpoint of a balanced diet is not one of protein deficiency but caloric inadequacy. If sufficient calories are provided through conventional foods there would be no protein problem.

MALNUTRITION

Malnutrition, particularly protein calorie malnutrition, adversely affects mental as well as physical development, productivity, the span of working years — all of which significantly influence the economic potential of an human individual.

The protein calorie malnutrition among the pre-school children in Northern Areas results in high child mortality. As much as 19.5 percent of the infants die within first year of life and 13 percent between 1-4 years. Both height and weight of the survived children are subnormal and are below third percentile of the lowa standard. The measurement of skinfold thickness indicated that females

all groups had more sub-cutaneous fat than males. The population surveyed were mostly lean and thin which indicated that their caloric intake was marginal for their needs. The arm circumference of the children (1-3 years) was 26 percent below the standard.

Blood haemoglobin values showed widespread occurrence of iron deficiency anaemia in all sections of population. The worst sufferers were children between the ages of 5-9 years with an incidence of 91.5 percent, followed by pregnant mothers, adult females and males. In spite of the fact that adequate dietary iron is available, anaemia is still prevalent in the area. High intake of cereal phytates, drinking of tea with bread and widespread parasitic infestation may be the causative factors in high incidence of anaemia in Gilgit, Hunza, Skardu and other parts of Northern Areas.

Goitre is the main nutritional deficiency disease of the area. About 66 percent of adult population, 57 percent of girls (10-14 years) and 51 percent of boys (5-9 years) were found to suffer from some degree of goitre. Since it does not give any physical infirmity to sufferers except in wearing of the cloths, people do not seem to take it very seriously.

SOME STRATEGIES OF FOOD PRODUCTION

To increase the food pro-

duction and to improve socio-economic conditions of people, the Pakistan Agricultural Research Council (PARC) and Agha Khan Foundation (AKF) are doing useful work in the area.

The following recommendations may be considered for solving the nutritional problems of the area.

- More land should be brought under cultivation to increase food production of cereals and legumes and better storage techniques be introduced to minimise food losses.
- Since there is plenty of fruits available in the Northern Areas, small fruit preservation units be installed at various locations to ensure the availability of food all the year round. Efficient methods of extraction of oil from apricot stones and walnuts be introduced to get the maximum yield of oil. This will increase the caloric intake of the people.
- Steps be taken to increase the meat and milk of local breeds of cattle and sheep by introducing artificial insemination technique, improving reproductive efficiency, reducing dry periods, ensuring early maturity and other improved animal husbandry practices. There are also prospects for developing fish, poultry and beekeeping in this area.
- Tea has the inhibitory effect on iron absorption and its excessive use may exert a negative effect on protein digestibility. A significant positive correlation between cancer mortality of specific types and national per capita consumption of tea has been reported. It is, therefore, recommended that drinking of tea be discouraged.
- Fortification of wheat flour or table salt with iron and iodine should be done at commercial level to eradicate anaemia and goitre.
- Steps should be taken to improve the socio-economic conditions of the people. There should be more cottage industries and more school and health centres. Applied nutrition programmes be launched to educate people about the nutritive value of foods and supplementary feeding of mothers and children.