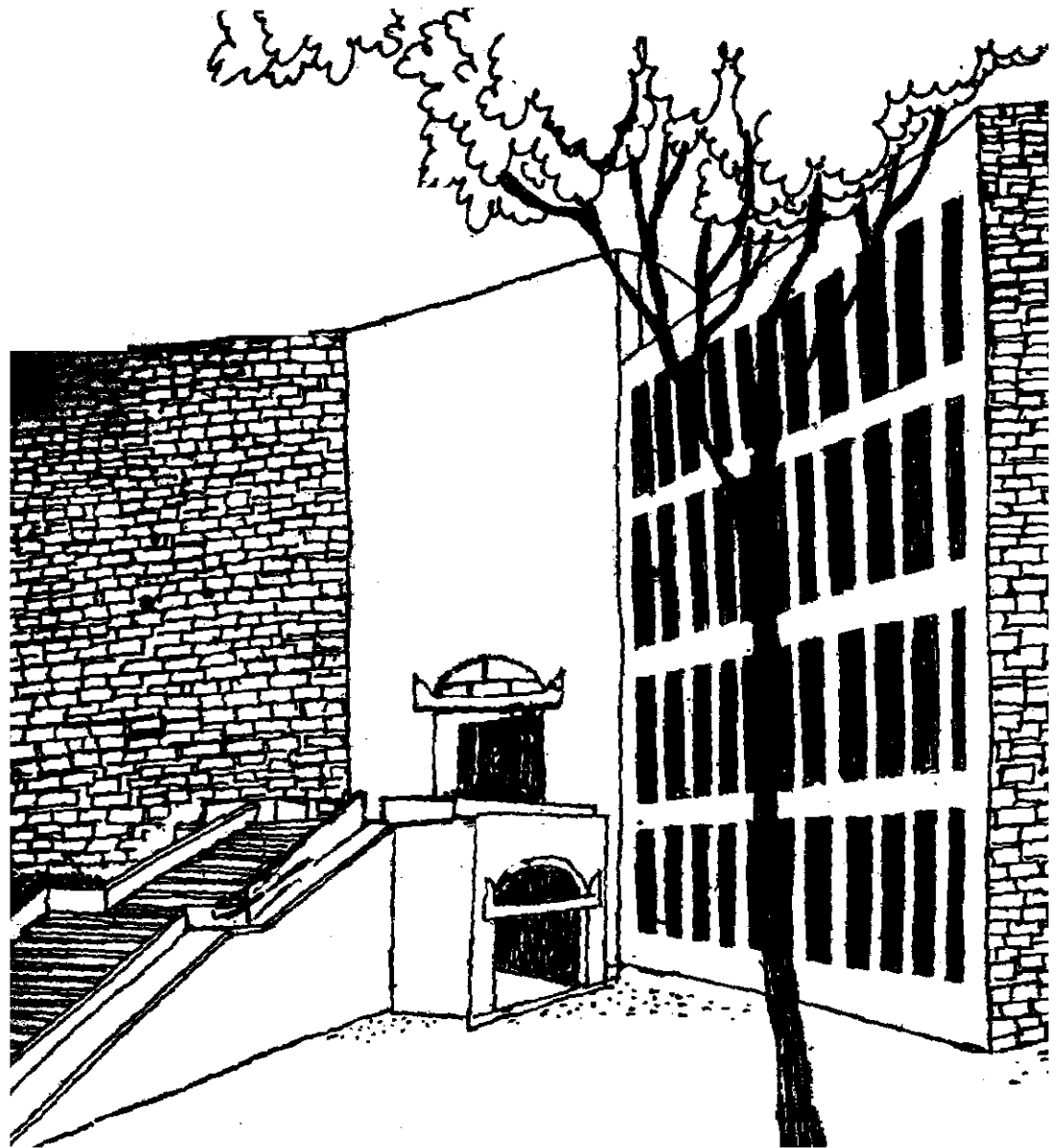




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A NUTRITION PROFILE OF AHMEDABAD

By
R.S. Ganapathy
&
Sugandha Ganapathy

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INDIAN INSTITUTE OF MANAGEMENT
AHMEDABAD-380015
INDIA

Abstract

A NUTRITION PROFILE OF AHMEDABAD

R.S. Ganapathy
Sugandha Ganapathy

Nutritional status is one of the key indicators of the development in a society. Urban nutritional problems are increasingly becoming critical in India. This paper surveys the nutrition scene in Ahmedabad in relation to its socio-economic context, analyses the major problems identified, reviews the emerging trends and develops some tentative recommendations for future action. Improving the nutritional status is a complex task and often involves long term, fundamental changes in lifestyles, economic activities and community action. In the short term, nutritional impacts can be achieved through education, public programmes and regulation. This exploratory paper is based on secondary data, informal discussions and observations and is written in a popular style to create a wider awareness of the issues. The paper identifies a number of researchable areas which need to be explored, if we have to get a systematic understanding of the problems in urban nutrition, as a guide to action.

A NUTRITION PROFILE OF AHMEDABAD

R.S.Ganapathy

Sugandha Ganapathy

1. INTRODUCTION

It has been predicted that by the year 2000 the urban population of the developing world might quadruple. Rapid urbanization has been the most fundamental and dramatic feature in the Third World Countries. The rapid urban growth has been instrumental in increasing poverty, city slums and peripheral shanty towns around many cities. Most of all it indicates a more dangerous and serious problem - "an insidious wasting away of a developing nation's human capital through malnutrition". According to the "Assessment of the World Food Situation - present and future" a working paper which was prepared for the United Nations World Food Conference (1974), as many as 500 million people are underfed. However, very little is known about the "state of malnutrition". The declining infant mortality rate during the last two decades has been cited as a result of improved nutritional situation. One can surmise that it has been achieved more due to the implementation of maternal and child care services and public health measures. It is definitely an improvement that families do not experience loss of children as often as they did in the past. But the fact that there is no significant improvement in the health of the children who do survive is a grave one that calls for public measures. The health and well

being of millions of children (mainly the poor) in India are at an appallingly low level. With poor growth and development and high rates of morbidity, there has been very little change in the improvement of the quality of life of poor. In fact, there has been a severe deterioration in the quality of life (World Health Organization, 1976).

The problems of nutrition are not among the poor people alone. It is found among affluent families and communities as well. In the western countries several people overeat and spend millions of dollars annually on slimming. In India too the problem occurs among the well to do as a result overeating and eating the wrong foods. When studying a city one cannot conclude that problems of nutrition are affiliated only with the poor. The ecological, cultural, educational and traditional contexts of the people, rich and poor have to be studied along with their nutritional impacts. This paper surveys the nutrition scene in Ahmedabad in relation to its socio-economic context, analyses the major problems identified, reviews the emerging trends and develops recommendations for future action.

2. AHMEDABAD : A NUTRITION PROFILE

2.1 Socio-economic Background

While wanting to study the nutritional status of a city like Ahmedabad, the initial image of the city that comes to one's mind is an affluent, beautiful city which is quite clean in

comparison to the other big cities of India. This is only the area that lies in the western half across the river Sabarmati consisting mainly of rich and upper middle class neighbourhoods. But the true picture is that approximately 50 per cent of its population (2.1 million) live in slums, chawls and poles scattered all over the city and also more predominantly in the eastern side of the city. It goes without saying that people living in the slums etc. are surviving in inhuman conditions without proper water supply and in surrounding insanitary conditions. The people in chawls may be, in comparison, living in a marginally better condition. Majority of these people are uneducated. Several of them are ill-fed or underfed and malnourished. It is apparent that the poor purchasing power of the people in this lower economic strata leads to poor consumption of food as well as undernutrition and malnutrition - especially among nutritionally vulnerable groups (pre-schoolers, pregnant women and lactating mothers). However, socio-economic status is not the only criterion for nutritional and health status. Even among the educated and affluent people lack of knowledge about nutrition and its consequences, improper food habits, poor personal hygiene and filthy ⁿ environmental sanitation lead to nutritionally related diseases like diabetes, blood pressure and obesity etc. In fact, several people are unaware that these diseases are related to nutrition (inadequate and improper intake of food). The nutritional disorders prevalent among children especially the poor is of great magnitude throughout

the country. In Ahmedabad and its surrounding rural areas protein and calorie malnutrition is highly prevalent and causes diseases like marasmus and kwashiorkor. Cases of vitamin A deficiency leading to night-blindness also are common more in the rural areas. Infant mortality rate is rather high in Gujarat. In fact, UNICEF has placed Gujarat in a red area in its chart depicting infant mortality, and "infant mortality rate according to experts is the best indicator of the health of the community".

A Socio-Economic Profile of Ahmedabad

Table 1.1 Population Growth

| | | |
|------------------------------------|---|-------------|
| Population in Ahmedabad city, 1981 | - | 2.1 million |
| 1961-71 | - | 40% growth |
| 1971-81 | - | 32% growth |

Table 1.2 Housing

| <u>Type</u> | <u>Number</u> | <u>Population as %age of total</u> |
|-----------------------|---------------|------------------------------------|
| Pols | 400 | 25% |
| Cooperative societies | 350 | 25% |
| Urban villages | 19 | 3% |
| Hutments | 300 | 26% |
| Chawls | 1400 | 21% |

| <u>Table 1.3</u> <u>Health Care</u> | |
|-------------------------------------|---------------|
| <u>Units</u> | <u>Number</u> |
| Dispensaries | 209 |
| Health Centres | 3 |
| Hospitals | 23 |

| <u>Table 1.4</u> <u>Educational Facilities</u> | |
|--|---------------|
| <u>Unit</u> | <u>Number</u> |
| Primary Schools | 849 |
| Higher Secondary Schools | 237 |
| Colleges | 72 |

| <u>Table 1.5</u> <u>Main Communities</u> | |
|--|----------------------|
| <u>Religion</u> | <u>Ethnic Groups</u> |
| Hindu | Gujarathis |
| Jain | Rajasthani/Hindi |
| Muslims | Maharashtrians |
| Christians | South Indians |
| Parsis | Singhis |
| | Tribals/Rabaris. |

Source: Ahmedabad Urban Development Authority - Draft Development Plan for AUDA area, 1981.

2.2 Food Habits

Generally Gujarathis have a fairly balanced diet with a large variety of food and lots of pulses which are main sources of vegetable protein. Unfortunately consumption of oil is also

far too high. Fried foods and snacks form the major part of the daily diet as well as vegetables which are cooked in large quantity of oil. In Ahmedabad, one could conclude that groundnut oil is solely used by Gujarathis. Consumption of polyunsaturated fats reduces the amount of cholesterol (the main component in artheroma, which accumulates in the body and causes atherosclerosis and coronary artery disease) in the blood. However, even though groundnut oil is also polyunsaturated, experiments in monkeys have revealed that it deposits atheroma in the blood vessels similar to that of saturated fats (Oliver Gillie and Derrik Mercer, 1979). One wonders whether "Amdavadis" (the people of Ahmedabad) are aware of this fact. People out of habit and convenience just continue to cook in the similar fashion as their mothers and grandmothers did. No doubt our ancestors have very skilfully planned a good balanced diet in their days. But the cost of eating, our perceptions about food and changes in our life styles are altering the way we eat. Very few people eat a complete breakfast, lunch, evening tea/coffee with snacks and dinner. Many eat properly only twice a day and several eat only one balanced meal a day.

In trying to analyze the traditional (or daily) diet of the Amdavadis, one comes to the conclusion that their breakfast consists of largely empty calories and fat. Gadhia, Sev., Masala Puri, Papadi, Jalebi and tea seems to be regular breakfast of several Gujarathis. People should be educated to eat breakfast (at least most of the days) containing whole grain wheat and cereal

with fruits and milk or buttermilk. The lunch and dinner usually consist of chapathis, rotlas or bakhris, dhal a vegetable kichidi and khadi. This seems fairly balanced. Once again one has to mention that fried puris are consumed as well as vegetables with large amount of oil. The Gujarathi food is sweetened to a great extent with gur or sugar. With the exception of Saurashtrians curd or buttermilk is not included in the daily diets of the Gujarathis. It has been found that consumption of green leafy vegetables (rich in Vitamin A) is very low as well as vegetables are eaten in very small quantities. Many families with 4-5 members consume only 200-250 gms. of vegetables a day. Gujarathis are almost hooked on to potatoes (except for the strict Jains). Excessive consumption of fried, sweetened and starchy food must be the root cause of obesity and fatness among Gujarathis. With the consumption of, less oil, sweets and starchy food and more intake of leafy vegetables the Gujarathi food could become more well-balanced. Pulse intake (source of plant protein) appears quite good among Gujarathis.

The above mentioned food intake of the people could only be affiliated with the affluent, the upper middle class and some middle class Amdavadis. Even among these all do not get to eat balanced food due to several social factors. Several factory workers and office goers may just consume a cup of tea/coffee and skip breakfast to reach their places of work on time. Going very early (7 - 7.30 A.M.) to those places might be one of the reasons

for skipping breakfast (for it is far too early to consume food at that time of the day). Of course in the case of poor workers and labourers not having money to spend on breakfast forces them to go to their work on an almost empty stomach. Almost everybody from the poorest to rich at least consume tea in the morning. A few of the factory workers may get subsidised lunch in their factories but many of the office goers or shop workers are seen eating lunch on the road side stalls. Ashram Road is rampant with these mobile 'dhal vada', 'Pav Bhaji' shops. In fact, several of the working people's lunch comprises of the above mentioned foods which may be tasty but nutritionally not well balanced. They are also prepared under very insanitary conditions with the possibility of adulteration. The economically better off percentage of this group might eat in restaurants paying higher prices, again not well balanced. The people regularly lunching in the road side stalls may be compelled to do so due to their poor purchasing power. Many work places do not have clean canteens providing nutritious foods at reasonable prices. But several affluent Amdavadis also seem to favour these places for their evening and late night snacks (in places like Law Garden, Manek Chowk and several other parks of the city). The college students seem to follow in stride, regarding eating out in road side stalls. In the case of school going children this problem is even more serious because the children, in addition to a balanced breakfast (assuming that the child has had breakfast before going to school) and dinner must also eat a

balanced lunch in the middle of the day. This means it should comprise of some energy giving staple food, some body building protein and some protective food (vitamins and minerals). Instead several children carry white bread (which has very little nutritional value) in their lunch boxes or fried snacks and sweets which are poor substitutes for a balanced meal. Even worse off are the kids who are given money to eat out who no doubt spend it in buying sweet drinks, candies and sweets or snacks sold outside the schools prepared in insanitary conditions. In fact, several school children rely on street foods for a considerable portion of their daily food intake. This vulnerable population (Ahmedabad has 849 primary schools and 237 higher secondary schools) has been neglected in several nutritional surveys which mainly concentrate only on pre-schoolers, pregnant women and lactating mothers. Basics of nutrition are taught in schools but they have not been effective enough or many schools have not tried hard enough in having their own canteens, providing the children with nutritious, well balanced food and snacks cooked under sanitary conditions. Hence, the only fairly balanced meal the men, college students and school children may get is the dinner. One thing worth mentioning in this regard is that 10-15 years back fruits in Ahmedabad were mainly consumed by the rich. Now people from lower economic strata also consume fruits. Even the poor occasionally consume bananas (which is the cheapest of all fruits).

Another misconception that is prevalent in Gujarat is the one regarding curd. It is consumed largely during severe summer days in the form of buttermilk. Several do not include it during winter or rainy season in their daily diet assuming that eating curd may bring cold and sorethroat to the people. Even in Western countries 'yogurt' is being considered to be a high source of protein and people there in the severest of winters consume refrigerated 'yogurt'.

Seasonal variation in food availability also plays a very important role in the Amdavadi's food consumption. In winter, availability of several legumes, peas and beans and green vegetables at cheaper prices enables them (mostly rich, upper middle class and few middle class) to consume plenty of pulses and beans etc. which form the major source of vegetable protein. 'Methi' and other vegetables (even though in very small quantities) are also consumed often. In summer, non availability of green and other vegetables as well as availability of mango fruits has led Amdavadis eat puri and mango juice. Papaya is consumed in winter in raw salad or fruit form. These are very good sources of vitamin A and children particularly benefit from these fruits. A small amount of vitamin A is enough to enable a person to overcome many vitamin A deficiencies. Another useful quality in it is that the body can store extra vitamin A in the liver that may last for many months.

In the "Diet Atlas of India (1971)" Gopalan et al have indicated that the average daily consumption of meat, fish and eggs per person is about 10 gms in Gujarat, in comparison to the recommended daily allowance of about 40 gms. So it appears that consumption of meat may be quite low, the percentage of population mostly consuming meat may comprise of mostly settlers from other states, muslims with few other Amdavadis. Eggs probably are being consumed by larger number of people (mostly from rich, upper middle class, middle class). Several vegetarians in the upper social classes have now begun giving eggs to children. Also the road side 'omlette stands' which were not to be seen 5-6 years ago are doing a roaring business in Ahmedabad now. Still a large percentage of Jains are very strict vegetarians.

Gujarathi Hindus consume rotla, bakhri, puris, rice, dhal, vegetables but very little green vegetables. There is ^{high} consumption of potatoes and most of the food is sweetened and oily. Milk and curd consumption is low. Several avoid onions and garlic.

Gujarathi Jains eat even more oily and spicy food, with khakra, bakhri, dhal but eat even lesser vegetables. They do not eat sprouted pulses or vegetables at all during religious fasting. Milk and curd consumption by Jains is lower than other Gujarathis. Practically none of them consume meat.

Muslims eat meat, chapathis, dhal and their vegetable consumption is very low.

Sindhis eat more wheat, dhal and vegetables. They also consume many fried snacks and sweets.

Maharashtrians eat more rice than the Gujarathis. They also eat chapathis, dhal and vegetables, as well as coconuts.

South Indians eat mostly rice, sambar and vegetables; but chappathis and consume dhal occasionally. They eat more green vegetables and consume more milk and curd than the Gujarathis.

North Indians eat parottas, dhal, vegetable and also fried things and sweets. They also consume more milk.

Rabaris eat rotla, bajri, onion, garlic and ginger (in chatni form). They eat potatoes, but rarely eat other vegetables.

So far, we have discussed only the nutritional status of the upper class and rich. Major problems of malnutrition are evident mainly among the urban and rural poor. As many as 10 per cent of the people in urban areas live in slums. Several of them are pavement dwellers. In Ahmedabad 25 per cent of the population live in pols, 26 per cent in hutments and 21 per cent in chauls. A substantial portion of these people have to live on less than one rupee per day per capita in a country where the relative prices of basic commodities like foodgrains, milk, vegetables etc. are very high. No wonder malnutrition is rampant amidst this group. Ignorance of the nutritional needs of the individual and

nutritive value of foods has worsened their nutritional and health status. Moreover, in these poor families it is the children and women who receive the lesser share of the food. They have been socially conditioned to serve the male head (who is, in most houses, the breadwinner) of the family, larger portion of the food that is available. Money may be scarce but that does not guarantee the wise use of it by the poor. Fascination and charm for aping the rich city dwellers have trapped them in spending money on what are perceived as fashionable foods such as tea, coffee, soft drinks cheap biscuits and white bread made with refined flour. Their ignorance has prevented them from realizing that at half the cost of these foods more nutritious food could be consumed enabling them to be healthier. Even worse are the conditions when transistors, nylon clothes and other fancy items are bought at the cost of family's nutritional status..

Malnutrition, especially Protein-Calorie Malnutrition (PCM) and associated infections have a synergistic influence on the health of children. Malnutrition and infections form a vicious circle (especially among children). Infections cause and contribute to undernutrition. A malnourished child who catches infectious diseases like diarrhea, whooping cough or measles can die of these diseases. By themselves these diseases might not be fatal but with malnutrition and the ignorant mothers not giving proper medical treatment, they might result in the child's death. A great deal of morbidity and mortality in the poor population

of Ahmedabad may be due to infections becoming fatal because of malnutrition. Some of the major causes of malnutrition among the poor in Ahmedabad could be stated as:

1. Low income and low purchasing power.
2. Poor environmental sanitation, over-crowded and ill ventilated houses, personal unhygienic habits.
3. Complete ignorance of nutritional needs of individuals and lack of awareness about inexpensive foods with high nutritive value.
4. Some wrong customs, beliefs and traditional habits regarding food.

Appallingly, many poor breastfeeding mothers have started bottle feeding (stopping breastfeeding prior to the necessary time). A reason behind it may be due to the convenience to get to work for long hours leaving the child in the hut to be bottlefed probably by the elder brother/sister. Unfortunately, feeding bottles are used in unhygienic conditions leading to the death of the infant through infection. Many overdilute the milk and baby foods to increase the duration of the supply. Many fail to give supplementary food to children after 6 months. Several give coffee and tea to children instead of milk. Starving several fevers and illness has had very harmful effects, and in the cases of diarrhea it has been fatal. Several mistakenly believe that eating dhal, meat, egg, bengal gram, groundnuts and green leafy vegetables by children will cause indigestion. Many people give laxatives to children on a regular basis. Superstitious beliefs have resulted in many families avoiding immunisation for their children.

The condition in the neighbouring rural villages of Ahmedabad might be quite similar. The cases of night blindness are far higher in number in the rural villages of Ahmedabad. The families of landless labourers and poor farmers face severe diet deficiencies and malnutrition. A farm labourer who requires 3000-4000 calories to perform hard labour in the fields gets 2500 or less that hardly enables him to work at his maximum capacity. No wonder agricultural yields are often low. It has been found that with the required calorific intake every day the farmer is able to double or even triple his productivity resulting in much higher yields and better health.

In this undernourished background, several children are conceived and born. No wonder about 10 per cent of the urban and rural poor children are malnourished even before their birth. The real calamity occurs to children after the sixth month. Until then they are breastfed satisfactorily. Later supplementary foods are not given to them out of ignorance or low purchasing power. Mothers lack the knowledge about the right food to be given to babies at different months. The insanitary environment and personal hygienic habits take their toll in the form of several nutrition related diseases. Two of the serious malnutrition related diseases in Ahmedabad are Marasmus and Kwashiorkor (both extreme forms of PCM), and also xerophthalmia (vitamin A deficiency) more common among rural villagers of Ahmedabad. Dr. Prahlad Rao,

Director of the Community Science Centre, rightly said, "It is ironical that in urban population quite a large number can afford to select foods but they are ignorant about nutritional value of foods and so malnourishment occurs. But in the villages both ignorance and want of money have led to malnourishment".

Food needed in relation to work requirements is also an important dimension of nutrition. Various types of work need different amounts of energy. The body is using calorie-energy even when it is sleeping. The table below lists the energy we need every day for different kinds of work.

Table 2.2.1
Work and Calorie Needs

| Work | Men | Women |
|----------------|-----------------|-----------------|
| | Calories needed | Calories needed |
| Light (easy) | 2100 | 1500 |
| Hard | 2300 | 1600 |
| Very hard | 2700 | 1900 |
| Extremely hard | 3000 | 2100 |

Source: Manual for Child Nutrition in Rural India, 1978.

The percentage of income spent on food by the poor may be assessed approximately as 60 to 80 per cent and about 40 to 45 per cent in the case of middle class families.

If we look at energy for cooking, LPG seems to be the common cooking fuel used in Ahmedabad (mostly among the upper middle class and rich). Kerosene is used by the lower middle class as well as poor. Many poor use a combination of kerosene and firewood. Several very poor people use 'cow dung cake' during rainy season and collect twigs from the surrounding places to use as fuel during summer. As energy prices and supply become more difficult, cooking habits and nutrition might get affected. For example, consumption of easily cooked but less nutritious food (rice instead of millots) might increase. This aspect has not been studied in Ahmedabad.

2.3 Sources of Nutrition in Ahmedabad's Food

Table 2.3.1

Components of Nutrition

C a r b o h y d r a t e s

Carbohydrates include sugar, starch, and related substances which are chemical compounds of carbon, hydrogen and oxygen. Wheat, rice and other grains are rich in carbohydrates. These foods are broken down into sugars in the body before being used as a source of energy for maintaining the body, for growth and every day activities. Starchy foods such as potatoes and grains are also important sources of protein.

Components of NutritionF a t s

Fats and oils are chemically similar components of carbon, hydrogen and oxygen which are combined in a characteristic way. Fats contain twice as much energy weight for weight, as of carbohydrates and so it is important to cut down on fats when dieting.

Fats and oils high in polyunsaturated and monounsaturated constituents are the best for health. Their composition in different food items is shown below. The total percentage is sometimes less than 100 per cent because of the presence of glycerol.

| | Saturated | Mono un- saturated | Poly unsaturated |
|----------------------------|-----------|-----------------------|---------------------|
| Chicken | 32% | 37% | 26% |
| Eggs | 33% | 45% | 17% |
| Milk, butter and cheese | 62% | 30% | 3% |
| Cocunut oil | 91% | 7% | 2% |
| Groundnut oil | 13% | 61% | 24% |
| Palm oil | 53% | 38% | 9% |
| Soyabean oil | 17% | 25% | 58% |
| Safflower oil | 11.5% | 13% | 75.5% |

Contd... Table 2.3.1Components of Nutrition

P r o t e i n s

Proteins are the essential building blocks of the living cells and comprise about 12 per cent of the weight of the human body (water 70% fat 15%). Proteins are made up from some 22 different amino acids. Amino acids are composed of carbon, hydrogen, oxygen, nitrogen and sometimes sulphur. Proteins are necessary for growth and body building.

V i t a m i n s

Vitamins are substances needed by the body, which the body cannot make for itself from raw materials. Vitamins are needed only in small amounts, mostly as catalysts helping vital chemical reactions. Shortage of vitamins cause deficiencies such as:

- Scurvy (shortage of vitamin C)
- Beriberi (Vitamin B shortage)
- Rickets (Vitamin C deficiency)
- Xeroderma (Vitamin A deficiency)

A good mixed diet contains all the necessary vitamins. It is much more important to try to obtain good mixed diet than to attempt to supplement the diet with vitamins. In fact, excess Vitamin A and D can be harmful and excess of others serve no purpose.

Adapted from 'The Complete Book of Body Maintenance, (1979).

Wheat, rice, millets and potatoes form the major energy foods in Ahmedabad. They are all carbohydrates with a small percentage of protein in them. Unfortunately the urban population largely consumes polished rice and wheat (in which the germ and the bran components, rich in protein, are taken away in the polishing process). They cost more money and have less food value than unpolished rice and whole wheat flour. Poor families can get better nourishment from consuming unpolished rice and whole grain wheat at a lower cost.

Some of the high protein plant foods are legumes such as soya beans, groundnuts, grams and dhals, dry beans and peas. Most of the upper class Ahmedavadis consume a considerable amount of these legumes (except soya beans). Dark green leaves also contain some protein but their consumption is low.

Some of the high animal protein foods are milk and cheese (consumption of which by Gujarathis is considered low), fish and eggs (consumption of eggs has increased in Ahmedabad recently). But one has to remember that the excessive intake of eggs causes increase in the cholesterol content in the blood. Meat of all kinds and chicken are also good protein sources.

Vitamins are also called protective foods. Vitamin A in food enables skin and eyes to stay healthy. There is vitamin A in many orange and yellow fruits and vegetables such as mangoes, papaya, ripe tomatoes and carrots, 'jamun' and also dark green leaves. Mangoes and papayas are consumed in season by Ahmedavadis but the intake of tomatoes, carrots and green leaves are low.

Vitamin B (Nicotin acid and Nicacin) is found in dhals, grams, whole wheat and groundnuts. Vitamin B deficiency leads to "pellagra". Dhals and grams are consumed in good amount by the upper classes. Groundnuts (which was considered poor man's nutritional source several years ago) consumption due to its high price has gone down. 'Chikki' (sweet made of groundnut and gud) to some extent is consumed by many Amdevadis. Folic acid is found in dark leaves but the consumption of it is low in Ahmedabad.

Vitamin C is found in many fruits and green vegetables such as palak, tomatoes, papaya, bitter gourd, sweet lemons, 'jamuns' etc.

Vitamin D is contained in milk, eggs, butter livers and fish. Vitamin D is made in the skin when it comes in contact with sunlight, hence people in India mostly get enough Vitamin D without any cost. But people may even be deprived of this due to ill-ventilated residences, tall buildings and narrow streets in the city cutting off the sunlight and leaving the places dark and dingy.

Regarding minerals, salt is the cheapest of all food items and consumed by almost all people. Iron is found in dark green vegetables, grams, dhals, cereals and meat. Except for green vegetables grams and dhals consumption among upper class in Ahmedabad is fairly good. Anaemia (iron deficiency) is another nutrition related disease found among many poor and also pregnant women in Ahmedabad. Iron deficiency could be easily avoided considering

the fact that leafy vegetables are not that expensive. Iodine is a mineral found in very small amounts in water and in some foods. Fortunately in Gujarat endemic goitre (iodine deficiency) is not a major public health problem. Calcium is found in foods like milk, dhals, bajra and wheat. The diseases caused by calcium deficiency are not common in Ahmedabad. Fluoride is a mineral found in water and helps to build strong teeth (Manual for Child Nutrition in Rural India, 1978).

2.4 Vegetables: Their Unknown aspects:

Vegetables provide vitamins and minerals is a known fact. Of late, in the U.S. the importance of the intake of vegetables in the diet for prevention of cancer has been demonstrated in animals. Dr. Leo Watterberg of the University of Minnesota School of Medicine found that vegetables like cauliflower, cabbage, broccoli, spinach, dill and citrus fruits like oranges and lemons caused a protective enzyme "which had the vital function of inactivating cancer causing chemicals" to be made in rats' liver. Beans and seeds rich in plant protein called lectins were found to protect animals against cancer. Beans also are known to reduce the cholesterol level in the blood. Many experiments have revealed that garlic and onions have chemical substances which "alter the ability of the blood to clot". This suggests that they may prevent blood clots, which lead ^{to} coronary heart attacks and strokes. To attain the maximum benefit of vitamins in vegetables one has to cook

them only slightly so that they remain crisp. Over cooking destroys the vitamins found in vegetables. Boiling vegetables and straining away the water also results in losses of other nutrients found in them (Oliver Gillio and Derrick Mercer, 1979).

One cannot conclude that all the upper classes and the affluent are in sound nutritional and health conditions. Cases of obesity, heart attacks, diabetes, blood pressure and also cancer are becoming more common among this group. Certainly over eating and eating the wrong diet have been found to be causing these diseases. Eating excessive fatty foods (fried snacks and sweets) leads to accumulation of fat in blood vessels making people prone to heart attacks and strokes. Excessive consumption of sugar leads to dental cavities and also obesity which in turn is related to high blood pressure and diabetes (there are also other reasons that cause these diseases). It has been found in the U.S. that large quantities of fat in the diet also makes people vulnerable to certain types of cancers. Smoking has also been considered a factor leading to a high risks of incidence of strokes and heart disease.

2.5 Nutrition for the Vulnerable (Pre-schoolers, Pregnant women and Lactating mothers) has been a major focus for certain private institutions and Government's Nutrition Programmes.

Nutrition Programmes in Ahmedabad:

a) Integrated Child Development Scheme (ICDS) is a project run by the Government of India. This project covers only the slum areas of the city municipal area. The main beneficiaries of the

programme are 0-6 year old children, pregnant women and lactating mothers. They render six types of services in the Anganwadis (centres in the slum areas):

1. Pre-school education.
2. Health check-up to all children.
3. Supplementary Nutrition.
4. Immunization.
5. Referral services.
6. Health and Nutrition Education.

In each Anganwadi, they cover approximately 1000 people. ICDS covers 100 Anganwadis in Ahmedabad bringing the population covered to one lakh (seventeen thousand being children). Community participation in some Anganwadis was successfully achieved and in few there were failures. The project seems quite successful in Ahmedabad. ICDS in most states has been found to be moderately effective in relation to its objectives.

b) Integrated Nutrition and Health Action Programme (INHAP)

The Community Science Centre in collaboration with CARE (Gujarat) extended a package of health services to the beneficiaries of Supplementary Nutrition Programme. During the year 1980-81 ten talukas (100 villages) around Ahmedabad received various health services, supplementary feeding and nutrition and

health education. One urban municipality was also included. The results were found encouraging and 1982 happens to be the second year and Extended INHAP is now dealing with 200 villages. The package of health services include:

1. Preventive Health Care.
2. Curative Health Care.
3. Nutritional Supplement.
4. Health and Nutrition Education.

In addition to this, INHAP has produced several nutrition education materials such as games, slides, puppets and story books which have been bought by CARE to be used in Balwadis.

c) St. Xaviers Social Service Society started a Supplementary Nutrition Programme in September 1981 at Sankalot Nagar near Ahmedabad. From 1982 January it was extended to few other places. Their main aim was to educate the people regarding nutrition and the cost factor was also included to make the parents appreciate the relationship between nutrition and income. The target group was between 1-5 years only. The food (consisting of locally used food like wheat, bajri, grams etc.) was made by a person living in the slum and distributed by trained (by the social service society) people also living there. The participants paid Rs.5 every month. Parents were also educated regarding nutritional and health care of their children. Children who attend

the programme achieved a weight gain of 1 kg. over the year. There has been a clear increase in the nutrition and health awareness in the people. According to the survey done two years back, infant mortality rate in this slum was found to be 130 per 1000 live births. As of today it has dropped to 80 per 1000 live births.

d) Blind Men's Association: This Association caters to several services to the disabled such as Education Services, Training Facilities, 'On the Job Training' Aids and Appliances for the Disabled and also runs a "Prevention of Blindness" programme which is a nutrition project. Only the rural population is targeted. Under this project, 10 villages near Ahmedabad are covered. They supply mainly Vitamin A tablets or syrups to the people who have been affected by night blindness and also distribute them to the others for the prevention of the disease. Supply of medicine is contributed by the Civil Hospital. This Association's funding has been solely given by the Ahmedabad public. They plan to cover some slums in Ahmedabad city. The programme thus far has been quite effective.

2.6 Nutrition, Some General Aspects:

Nutrition does not mean only the proper intake of food. Personal hygiene, living in a clean environment are also factors that contribute to a person's nutritional and health status. Exercising also is extremely beneficial to one's good health.

Arthur S. Leon M.D., an internationally renowned exercise physiologist at the University of Minnesota says exercise helps by:

- Getting more blood to the heart to provide oxygen and nourishment.
- Improving the heart's ability to function.
- Slowing the heart beat and lowering blood pressure.
- Strengthening the body muscles.
- Lowering body weight.
- Lowering blood cholesterol and other fats in the blood.
- Improving the metabolizing of sugar.
- Improving other healthy habits (fit people cut down on cigarettes and junk foods).
- Lowering tension and other effects of stress.

There is also evidence that exercise helps ^{to} relieve depression and stress.

Approximate Energy Expenditure by a 150 lbs Person in various activities:

| <u>Activity</u> | <u>Calories/hr</u> |
|------------------------|--------------------|
| Lying down or sleeping | 80 |
| Sitting | 100 |
| Driving an Automobile | 120 |
| Standing | 140 |
| Domestic work | 180 |
| Walking 2½ mph. | 210 |
| Bicycling 5½ mph. | 210 |

| <u>Activity</u> | <u>Calories/hr.</u> |
|--------------------------|---------------------|
| Gardening | 220 |
| Swimming 1/4 mph. | 300 |
| Roller skating | 350 |
| Wood chopping and sawing | 400 |
| Running 10 mph. | 900 |

Source: Based on material prepared by Robert E Johnson MD, Ph.D. and Colleagues, University of Illinois.

It is encouraging to see several people (mostly men) jogging in the streets of Ahmedabad. The number of Health Clubs and Yoga Exercises for women are also increasing in number in the city. If undernourishment and underweight is the problem of the poor, overweight and obesity is increasingly becoming the problem of the affluent society. It is difficult to estimate how many people in Ahmedabad are exercise conscious and how many of them relate exercising to nutrition. Their percentage is likely to be small.

2.7 The Street Food Consumer and Nutrition:

The road side stalls and vendors who sell snacks and meal substitutes in Ahmedabad, serve a rapidly growing and often nutritionally vulnerable consumers. It has been already mentioned that several school children rely on these street foods for their midday meals, and how this vulnerable group has been neglected in the nutritional surveys. Another group dependant on street food is the

urban working population, especially the men and women in the lower income groups. In Ahmedabad the affluent also favour these places for their eating out in the evening. It is well known that foods served here are cooked and served in most unhygienic, insanitary conditions with ^{high} chances of food adulteration. Increasing population, rapid urbanisation and increasing number of schools imply that the existing food markets will be called upon to fulfil their needs at low cost. Just because this market may bring harm to the nutritional status of the people one cannot completely get rid of them. It might only worsen the situation, for a large number of consumers dependent on these foods for their meals have to go hungry. And so, Government policies should be directed towards inspection of food markets, take strict measures so that nutritional food is prepared at a low cost under hygienic conditions. This should become an integrated part of the National Applied Nutrition Programme and effectively enforced at the state level. This could be achieved only by making both the consumer and the entrepreneur nutritionally aware as well as paying attention to the other aspects of nutrition, sanitation, personal hygiene, good environment. In most of the middle class restaurants similar policies should be enforced.

An increasing number of people have begun to eat out. Amdavadis patronize both street-side stalls, restaurants and other high priced eat-out places. Law Garden street food area is very crowded in the weekened evenings till late in the night.

There is a street near Manok Chowk where snacks are sold starting from 11'0 clock in the night to almost 2 to 3 in the morning. It is always crowded irrespective of the odd time of the night to eat out. There are long queues in all the restaurants on weekends and even some weekday evenings. Restaurants may be a boon to the housewives who do not get relief from their job of cooking on weekdays or weekends. And so, the role of government agencies should be to ensure that nutritious food is served in these restaurants.

3. NUTRITION EDUCATION FOR CHILDREN:

The schools should take on the task of effective nutrition education. Presently, nutrition education is very ineffective in educational institutions. The children's awareness should be changed so that they ^{cultivate} nutritious food habits. The use of mass media for this purpose is also weak and needs to be strengthened.

4. NUTRITION AND PUBLIC POLICY:

The term "effectiveness" is relative. Several government agencies already claim that they have been "very effective" in the implementation of nutrition programmes. But the conditions of the poor in India speak for themselves, when the socio-economic inequality is growing. It has been estimated that 20 per cent of the population with the lowest income has half the per capita food energy intake of the top ten per cent.

The Applied Nutrition Programme, Midday Meals and other governmental, private institutional, nutrition programme to combat malnutrition among the poor have been certainly welcomed by the poor people in the country. But the long term effects of them do not appear to be encouraging. The major nutrition programmes operating in the states have become ineffective in tackling the enormous magnitude of the problem. Developing nutritional awareness is a key task. What people can be taught to do for themselves is always greater than direct nutritional intervention which ameliorates but does not develop endogenous capacity.

Fighting malnutrition through community action is likely ^{to be} ~~one~~ of the effective methods for improving the nutritional status of Ahmedabad. In a deep sense, it requires fundamental changes in the people's attitudes. It is not an easy task, especially with a target population that is resistant to new ideas, and is apathetic. Traditional and cultural beliefs, and ignorance make them resist the idea of accepting food habits that would improve their health. The historical and structural features of the conditions of the poor appear to pose formidable challenges. Mainly imparting information about nutrition or direct delivery of nutritional food has proved to be not effective in solving the problems. Therefore, the nutrition programmes should include demonstrations, non-formal education and communication between the teacher and the nutritionally vulnerable groups. People should be enabled to understand their nutritional condition and also develop interest

in improving their nutrition, to become more committed. Nutrition education will succeed only "if the people we teach change their behaviour, and go and teach other people to do the same". Word of mouth communication is of key importance. Every housewife could easily participate in this community action initially by informing (effectively) the servant working for her. Familiarity between the housewives and the servants will enable them to educate the servants to better nutritional awareness. In this respect a very large population of the poor community could be covered without even an establishment of a programme by the institutions. It has been found that if doctors are able to impart nutritional knowledge and intake of good food to their regular patients, they might be aiding in the birth of a nutritionally better society. Since nutritional problem cannot be isolated to one particular cause, an "integrated approach" at national level should become more important and effective. There is a growing awareness that malnutrition is a result of poverty arising from several complex inter-related factors like unemployment, rapid population increase, low productivity, uneven distribution of income, illiteracy, poor environmental sanitation and socio-economic inequalities. Such a perspective calls for long term (albeit slow) efforts in basic socio-economic change and for immediate public health measures to make living more congenial for the urban poor.

People can be made responsible for the betterment of their own life. One wonders whether people realize that just to persuade people to accept information is not an effective educational activity. In speaking of agricultural extension, Paulo Freire makes a point which is applicable to nutritionists in their role as educators.

"Agronomists are specialists who work with others on the situation influencing them. However, from a truly humanistic point of view, it is not for them to extend, entrust or dictate their technical capacities nor is it for them to persuade by using peasants as "blank pages" for their propaganda. In their role as educators, they must refuse to 'domesticate' people. Their task is communication not extension".

5. CONCLUSION

Nutritional problems in Ahmedabad are multifaced. Long term solutions are more fundamental in nature. In the short run, education, communication, public programmes and regulation are some of the policy options. The key point is the encourage nutrition with other healthy life styles and broader environmental goals, through public health measures. An effective public distribution system and nutritional monitoring system (through possibly a Nutrition Cell) are needed. It is possible to build a healthy nutrition conscious community in Ahmedabad.

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