

## Culture and its Influence on Nutrition and Oral Health

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### INTRODUCTION

Food habits are one of the most complex aspects of human behavior, being determined by multiple motives and directed and controlled by multiple stimuli. Food acceptance is a complex reaction influenced by biochemical, physiological, psychological, social and educational factors. Metabolic conditions play an important role. Age, sex and mental state are factors of importance. People differ greatly in their sensory response to foods. The likes and dislikes of the individual with respect to food move in a framework of race, tradition, economic status and environmental conditions<sup>1</sup>.

For most people food is cultural, not nutritional. A plant or animal may be considered edible in one society and inedible in another. Probably one of the most important things to remember in connection with the cultural factors involved in food habits is that there are many combination of food which will give same nutritional results<sup>1</sup>.

Culture consist of values, attitudes, habits and customs, acquired by learning which starts with the earliest experiences of childhood, much of which is not deliberately taught by anyone and which so thoroughly internalized that it is unconscious but 'goes deep' (Fathauer.G.H,1960)<sup>2</sup>. Food habits are among the oldest and most deeply entrenched aspects of many cultures and cannot, therefore, be easily changed, or if forcibly changed, can produce a series of unexpected and

unwelcome reactions. Food and food habits as a basic part of culture serve as a focus of emotional association, a channel of love, discrimination and disapproval and usually have symbolic references. The sharing of food symbolizes a high degree of social intimacy and acceptance<sup>1</sup>.

In many cultures food has a social or ceremonial role. Certain foods are highly prized; others are reserved for special holidays or religious feasts; still others are a mark of social position. There are cultural classifications of food such as 'inedible', 'edible by animals', 'edible by human beings but not by one's own kind of human being', 'edible by human being such as self', 'edible by self'. In different cultures, certain foods are considered 'heavy', some are 'light' some as 'foods for strength'; some as 'luxury', etc<sup>1</sup>.

The challenge to health care provider is to be culturally adaptable, to display cross-cultural communication skills, to remain aware of nonverbal cues that are culturally motives, and to move toward a trusting interpersonal relationship as quickly as possible.

John Cassel (1957)<sup>3</sup> had illustrated in his review, that it is possible to derive some guiding principles indicating the significance of social and cultural factors to health programs in general. Health workers should have an intimate detailed knowledge of the people's beliefs, attitudes, knowledge and behavior before attempting to introduce any innovation into an area.

The second principle, which is usually more difficult to apply, is that the psychologic and social functions of these practices, beliefs, and attitudes need to be evaluated. As stated by Benjamin Paul<sup>3</sup>, "It is relatively easy to perceive that others have different customs and beliefs, especially if they are 'odd' or 'curious'. It is generally more difficult to perceive the pattern or system into which these customs or beliefs fit." It is in this area of determining the pattern or system into which these customs or beliefs fit those social scientists can probably make their greatest contribution to health programs. This is the knowledge that will help to determine why certain practices exist, how difficult it will be to change them, and give indications of the techniques that can be expected to be most helpful.

A third principle that should be emphasized was unfortunately not well illustrated in the example but is of fundamental importance. The sub cultural groups must be carefully defined, as programs based on premises, true for one group, will not necessarily be successful in a neighboring group. This also is an area in which we as health workers can receive invaluable assistance from social scientists.

Anne Burgess (1961)<sup>4</sup> stated that health assistants with some training in the principles of anthropology and education are indeed an innovation and it appears an effective one. Where nutrition education has proved disappointing in the past, could it be that 'retention of customs' has been as 'turbulent a thing' as that of the villagers.

Nelson Freimer et al (1983)<sup>5</sup>. Cultural variation may play an important role in human nutrition and must be considered in either clinical or public health intervention particularly in areas with large immigrant populations. Acculturative and environmental change influences the food habits and health of transitional groups. Nutritional assessment may be complicated by cultural variation. The relationship between ethnicity and nutrition may be of evolutionary significance. Food beliefs may have beneficial or detrimental effects on health status. The study of acculturating populations may elucidate the pathogenesis of nutrition-related chronic diseases. Appreciation of the interaction of culture and nutrition may be of

benefit to physicians and nutritionists in clinical practice and to those concerned with the prevention of nutrition related chronic diseases.

Christine M. Olson (1989)<sup>6</sup> had stated that childhood nutrition education is imperative in health promotion and disease prevention. The Report concludes 'that overconsumption of certain dietary components is now a major concern for Americans'. While many food factors are involved, chief among them is the disproportionate consumption of foods high in fat, often at the expense of foods high in complex carbohydrates and fiber that may be more conducive to health.

Two widely recommended strategies for incorporating nutrition education directed toward children and youth into health promotion and disease prevention efforts are school-based nutrition education and the integration of nutritional care into health care. School based nutrition education programs targeted toward very specific eating behaviors are showing very promising results in regard to behavior and attitude change of children and adolescents. Substantial changes in health care providers' attitudes and practices and in the funding and financing of health care will be needed if nutrition education is to be delivered in the context of routine health care.

Puline M Adair, Cynthia M Pine et al (2004)<sup>7</sup> had conducted a study on familial and cultural perceptions and beliefs of oral hygiene and dietary practices among ethnically and socio-economically diverse groups. Factor analysis identified those attitudes, towards tooth brushing, sugar snacking and childhood caries. Attitudes were significantly different in families from deprived and non-deprived backgrounds and in families of children with and without caries. Parents' perception of their ability to control their children's tooth brushing and sugar snacking habits were the most significant predictors of whether or not favorable habits were reported. Some differences were found by site and ethnic group. This study supports the hypothesis that parental attitudes significantly has an impact on the establishment of habits favorable to oral health. An appreciation of the impact of cultural and ethnic diversity is important in understanding how parental attitudes to oral health

vary. Further research should examine in a prospective intervention whether enhancing parenting skills is an effective route to preventing childhood caries.

Abdul Arif Khan et al (2008)<sup>8</sup> had conducted a study on prevalence of dental caries among the population of Gwalior (*India*) in relation of different associated factors. They found that incidence of dental caries was higher in female. High number of dental caries patients was observed among vegetarian population. 21-30 year age group was found to be most infected with dental caries. This study helpful to analyze respective role of different dietary factors including protein rich diet, age, gender etc. on the prevalence of dental caries, which can be helpful to counteract the potential increase in the cases of dental caries and to design and plan preventive strategies for the persons at greatest risk.

#### **Factors influencing standards of nutrition Soil management**

As an omnivorous animal, man obtains his food from both animal and vegetable sources. Basically, however, the nutritive value of his diet is determined by the nutrients present in the soil upon which his food is grown. The nutritive elements in the soil and the fertility of the soil depend not only on its geologic structure but also on the manner in which the soil is conserved and cultivated. In many underdeveloped countries the traditional horticultural and agricultural practices are primitive, but they do maintain the fertility of the soil. In some countries, however, an increase in the population and industrialization has encouraged the growth of a cash-crop economy, the abandonment of customary practices of soil conservation, and the impoverishment of the soil. These changes can be reflected in deterioration in the health of both animals and man. In Africa, for example, the prevalence of Kwashiorkor is higher in areas with a cash-crop economy than in less sophisticated areas where mixed farming is still practiced.

#### **Food selection**

It has often been demonstrated that, in many areas of the world, people can live completely healthy lives despite the fact that, according to Western standards, their nutrition is inadequate<sup>8</sup>.

Authorities on the nutrition of people in Southeast Asia have pointed out that a diet which appears to be deficient is actually adequate, either because the people eat the most nutritious parts of plants and animals which elsewhere are thrown away as waste or because they have achieved an adaptation to the economical use of the food eaten. It is therefore; wrong to use standards that are appropriate in industrialized societies as a measure of the nutritional adequacy of the diet of underdeveloped or primitive societies.

The food actually consumed is obviously determined by what is available. It is not surprising, therefore, to find considerable differences in food selection between rural and urban communities. Within both urban and rural communities, variations in food selection between families are also influenced by socio-economic status.

The selection of food is often based on religious beliefs. For example, the attitude toward corn among Mexican Indians is religious. Often they cannot be persuaded to grow other crops on land where these would do better than corn, because they would rather have a poor crop of corn than a good crop of something that is not corn. Because of the strong religious feeling against killing or eating cattle, less than per cent of the population of India eat meat. Moslems and Jews can eat meat other than pork, but only if it has been killed in certain ways governed by religious laws.

Many people are strict vegetarians for religious reasons. Some are vegetarians because they believe in the superior virtue of plant foods. Others avoid certain foods simply because they do not like them. Storage and distribution of food.-In the Middle East and Far East, where the facilities for refrigeration, preservation, or storage are non-existent, and any animal slaughtered must be consumed immediately, so that the supply of first-class protein is irregular<sup>8</sup>.

In other regions, such as the Arctic and parts of Africa, meat is preserved by drying. In parts of Europe and the Middle East, fruits and vegetables are not preserved, so that they can be eaten only seasonally. Sometimes traditional methods of

preservation have been lost as a result of outside contact.' In parts of Africa, poor storage methods have resulted in the development of toxic elements in rice.

In short, epidemiologists and public health workers who recognize a need for better nutrition must consider the traditional methods of growing and storing food. However, it is not enough merely to arrange to increase the available food supply. Changes will be acceptable only if they are in keeping with the established food habits of the people.

#### **Practices related to maternal and infant feeding**

In some societies an infant is breast-fed or offered other food after punishment or when it cries. If these people are advised to breast-feed a child only at scheduled times or if they are advised that it is harmful to eat between meals, the public health worker makes the responsible for finding some other acceptable method by which the mother can give reassurance to a child who is punished or upset for some other reason.

In some of the Pacific Islands where the people have a bare subsistence intake of total nutrients, pregnancy, which increases nutritional requirements, may result in frank inadequacy states. This can be aggravated by taboos or customs which prohibit the consumption of certain nutrient-rich foods by pregnant or postpartum women.

This combination of factors may be responsible for the defects in both matrix formation and calcification of the enamel of deciduous teeth found in Fiji, Pukapuka, New Guinea, Hawaii, and Niue (*New Zealand*).

#### **Methods of cooking**

Methods of cooking have a marked effect not only on the physical character of the food as consumed but also on the nutritive value of the diet.

#### **The relation of nutrition to dental health**

The manner in which nutritional factors may affect dental health is shown in Figure 2.3. Attempts to compare the prevalence of dental diseases and conditions with the nutritional value

of traditional diets have produced conflicting results—'No consistent association of dental caries with a deficiency of any known nutrient has been established. The prevalence of caries may be high or low in people whose general nutritional standard is high, and it may be high or low in people whose nutritional standard is low. Since dental caries begins on the outside of a tooth, it is generally conceded that nutritional factors could affect the resistance or predisposition of teeth to dental caries. The role of major nutrients in this respect is still debatable, but since the discovery of the fluoride-caries relationship the interest in trace elements and micronutrients has been heightened.

According to Kreshover (1956)<sup>9</sup>, the incidence of oral manifestations of nutritional deficiencies is probably much less than commonly thought. In Italy,

Massler.M (1951)<sup>10</sup> has found gingivitis is frequently associated with lower nutritional status, and Roth.H (1957)<sup>11</sup> has claimed that, once started, periodontal disease progresses more rapidly in patients whose nutrition is poor.

The World Health Organization's Expert Committee (1961)<sup>12</sup> on periodontal diseases has said that surveys of gingivitis in areas where nutritional deficiencies are evident in the population have not shown any consistent association between the deficiencies and gingivitis. However, they have also stated: "These findings do not prove that total nutrition and periodontal disease are unrelated; before any progress can be made towards answering this question, thorough dietary and nutritional surveys are needed, both in groups with a low prevalence of periodontal disease and in groups with a very high prevalence."

Evidence from surveys of isolated communities suggests that a relationship exists between poor maternal and infant nutrition and defects in the structure of the enamel of deciduous teeth. However, the actual nutrients involved have not been determined. According to Balendra.W(1949)<sup>13</sup>, a low intake of vitamin A increases the predisposition of betel-nut chewers to oral carcinoma.

**Dietary factors**

The relationship of some dietary factors to dental health is shown in Figure 2.3.

Numerous dental and dietary surveys have established that a direct relationship exists between the prevalence of dental caries and the frequency with which fermentable carbohydrate in a sticky form is consumed. The studies which provide the evidence for this are of the following types: (1) Population studies: These have shown that the prevalence of caries is highest in countries with the highest and most frequent consumption of refined sugar and flour. (2) Studies of populations in which national dietary habits have been drastically changed during world wars I and II. These have shown that alterations in the prevalence of caries have accompanied changes in the frequency with which sugar and sugar products, such as candy, sugar-containing cookies, and cakes, have been consumed. (3) Studies of populations in developing countries. These have shown that the prevalence of dental caries increases when the people change from their traditional diet to one which includes refined sugar and flour. Such foods appear to be universally acceptable not only because of their pleasant taste but also because of their cheapness and the fact that they can be stored for comparatively long periods of time. (4) Controlled longitudinal studies in which groups of people are kept under observation for a specified period of time. These have shown that the incidence of caries can be altered by changing the form in which carbohydrate is eaten (*i.e., its stickiness*) and the frequency with which it is taken.

Epidemiologic studies have also shown, however, that refined sugar is not the sole cause of caries, since in some isolated communities caries does occur in its absence.

From this it is clear that any study of the diet in relation to dental caries should not be restricted to an evaluation of its carbohydrate content. Other important factors include the selection and preparation of food, the order of eating, and the frequency of eating. These factors vary widely in accordance with local custom or habit.

**Selection and preparation of food**

These factors determine the physical character of the food, and this affects the vigor and duration of mastication. This in turn affects the rate of flow of saliva and the rate of clearance of food debris from the mouth.

Many authors who have conducted surveys in underdeveloped countries claim that the physical nature of the food is the most significant factor in the initiation of dental caries. Klatsky, M (1948)<sup>14</sup>, for example, claims that "the refined texture of the food we eat and the sophisticated methods of its preparation and consumption are the most important contributing factors in dental degeneration." He also claims that soft food which requires little mastication results in underdeveloped jaws and poorly aligned teeth. This view, however, is not supported by modern orthodontists. Neumann and Di Salvo (1954)<sup>15</sup> have suggested that intermittent functional loads on the teeth resulting from vigorous mastication of tough foods not only may affect the rate of ionic exchange between the enamel and its environment but may also induce changes in the structure of enamel which increase the resistance of teeth to caries.

Several observers have noticed that some people who habitually chew sugar cane (*but do not eat refined sugar*) have a relatively low caries rate. Further studies are required, however, to determine whether or not the incidence of caries can be reduced by altering the physical character of the food in people who frequently consume sticky, refined sugar preparations.

In several underdeveloped countries the customary methods of cooking result in the incorporation of sand and ashes in the food. This results in extensive abrasion of the teeth. Occlusal surfaces are worn down below the maximum circumference of the teeth, and the proximal enamel breaks away, creating a space into which food becomes impacted. In this way heavy abrasion tends to decrease occlusal caries and predispose to proximal caries.

**Order of eating**

Fibrous or tough food will promote the clearance of food debris from the mouth, only if it is

eaten at the end of a meal. In some countries this is a routine practice. It is also widely advocated in most highly developed countries.

**Frequency of eating**

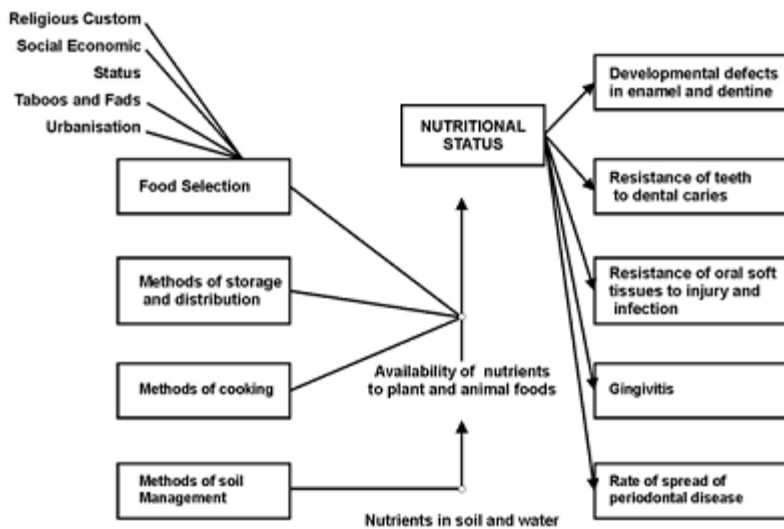
In many underdeveloped countries and isolated communities the people have only one or two meals a day. Between-meal food consumption is neither so frequent nor as ritualized as in many European countries. In most cases, the food requires vigorous mastication, and the diet contains little or no refined carbohydrate.

Under these circumstances the prevalence of caries is always very low, but no attempt has yet been made to determine the relative contribution of the frequency of eating and vigorous mastication to this state of affairs.

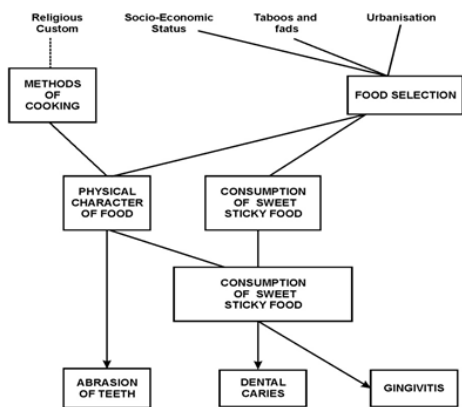
Examples of dietary preferences according to some cultural and religious beliefs

**African American**

- Diet varies greatly according to region of country and lifestyle.
- They have high incidence of lactose



**Fig. 1: Shows habits influence on standard of nutrition**



**Fig. 2: Shows dietary habits and dental conditions**

intolerance; low consumption of dairy products.

- Most popular meat dishes include pork (*variety cuts*), fish, small game, and poultry.
- Frying and boiling are the most common preparation methods.
- Primary grain product is corn.
- Honey, molasses, and sugar products are preferred as snacks.

**Asian**

- High incidence of lactose intolerance; traditional alternative sources of calcium include tofu, soy milk, small bones in fish and poultry.
- A variety of protein rich foods are often



- preserved by salting and drying.
- Make Pastes of shrimp and legumes.
- Wheat and rice are primary grain products.
- Fresh fruits and vegetables, also pickled, dried or preserved.

**Buddhism**

- Vegetarianism with five pungent foods excluded: garlic, leek, scallion, chives, and onion.

**Hinduism**

- Mostly vegetarian except in northern India where meat is consumed (*except for beef*)

**Islam**

- No consumption of unclean foods (*carrion or dead animals, swine*).
- No consumption of animals slaughtered without pronouncing the name of Allah or killed in manner that prohibits the complete draining of blood from their bodies.
- No consumption of carnivorous animals with fangs, birds of prey, and land animals without ears (*frogs, snakes*).

**Latino**

- They have high incidence of lactose intolerance; low consumption of dairy products.
- Vegetable proteins are more common in countries with large rural and urban poor populations.

- Pork, goat, and poultry are common meats. Much of it is marinated, chopped or ground, and often mixed with vegetables and cereals.
- Principle bread is tortilla.
- Foods are often heavily spiced.

**Native American**

- They have high incidence of lactose intolerance; low consumption of dairy products.
- Meat is highly valued, mostly grilled, stewed, or preserved through drying and smoking.
- Primary grain used is corn; wild rice is also popularly consumed.

**Orthodox Judaism**

- Prohibits consumption of swine, shellfish, and carrion eaters.
- Ritual slaughtering of animals.
- Ritual breaking of bread.
- Meat and milk are prepared in separate dishes/utensils and containers and not cooked, served, or eaten together.

The dentist as a member of the health team can and in fact, is expected to impart sound nutritional information to his patients, particularly if it has an oral relevance. It is essential to have knowledge of the culture, nutrition and its effect on oral disease.

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