

## NUTRITION AND HEALTH IN SOCIETIES IN TRANSITION\*

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One often hears the expression that a country or society is "in transition," but there is not a clear definition of such, nor is there an effort to quantitate or characterize the level of transition undergone by a given nation. The present discussion is not intended to result in an adequate description of the process of classifying developing nations into functional levels according to their degree of transition. Rather, the paper represents an attempt to review, often in a comparative manner, overt evolutionary changes in nutrition and health experienced by societies in their process toward urban life, industrialization and development of scientific, technological, and economic potentials.

Great difficulties arise in determining the characteristics of a transitional society, since most of humankind has always *been* involved in cultural and economic evolutionary processes. Thus, it is difficult to establish demarcations that meaningfully identify, in a historical context, relevant changes from the nutrition and health points of view, and it is difficult to explain how and when these changes were effected in the various regions and countries,

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Anthropological research shows that changes in food habits (and likely nutrition and health status) occurred even among prehistoric societies as a result of the interplay between food availability by gathering and hunting, the development of farming and exploitation of domestic animals, and the enrichment of technology particularly through the use of fire and more elaborate preparation of foods.'

Some societies were able to remain remarkably resistant to change, either because of their relative isolation, as in parts of South America, or possibly as a result of firmly established cultural taboos, beliefs and traditions, as in parts of East Africa.<sup>2</sup> Anthropological and social studies of such traditional communities have permitted an analysis of the manner in which transition to new types of life and different systems of social intercourse and working organization evolves. For instance, a recollection of case studies reveals how frequently food habits became altered by exposure to another civilization, often with deleterious effects upon health. Consequently, it is important to develop an anthropological and epidemiological insight into the nature of problems to better understand behavior motivation and correct the alterations induced."

While some degree of change is presently observed in all traditional societies, change occurs more intensively in nations on the way to industrialization. Transition was particularly prominent, or at least more widely noted, in the Old World and North America in the 17th through the 19th Centuries, and in Latin America, Africa and Asia in the 19th and

20th Centuries."€

Since evolution in the various continents and countries did not occur simultaneously, but rather corresponded to epochs of economic, scientific and technological development, the manner in which it occurred and its outcome varied for each case as will be illustrated later on.

#### NUTRITION AND HEALTH IN 20TH CENTURY TRADITIONAL SOCIETIES

Contemporary traditional societies are common in Asia, Africa and Latin America. In the Western Hemisphere they are represented primarily by the Indian populations of Mexico, Guatemala, Colombia, Brazil, Bolivia, and Peru, although they are found in other countries as well. Furthermore, some black populations in the Caribbean and Atlantic Coast of Central and South America, and some Mestizo (Ladino) populations also exhibit a relative degree of traditionalism, particularly those living in remote and isolated rural areas.

The characteristic element of traditional societies is solidly established family units, which aggregate to constitute communities of small size, subsisting on a primitive form of agriculture, and with a way of life rich in traditions that determine the pattern of reproduction, childbirth, child-rearing, and survival. For instance, among contemporary Mayans in rural Central America, deliveries are in the home, infants are breast-fed for several months or years, mother-infant attachment is intense, and bonds among members of the family are very stable,' all of which are conditions favorable to child-rearing and survival and are important protection for the child in an otherwise perilous environment. On the other hand, the prevailing poverty in traditional societies, and the poor education and limited technology, all of *which* lead to deficiencies in sanitation and personal hygiene, favor an inadequate diet and recurrent infection. Poor diet and recurrent infections are responsible for the chronic and acute forms of malnutrition observed in the general population. Stunted growth in the mother re

sults from a background of malnutrition; the mother conceives at an early age and suffers from frequent infection and deficient food intake during pregnancy. Consequently, often the mother cannot support an adequate fetal growth and development, which results in a high incidence of pre-term and small-for-gestational-age infants associated with a high infant mortality and failure to thrive.

The traditional diet has a relatively small variety of foods. Generally, grains and starchy and bulky foods predominate, and there is a low intake of animal fat, sugar and salt. While malnutrition in childhood is common, the risk of diabetes, hypertension, coronary heart disease and some types of cancer is low. Smoking is infrequent and much physical activity is part of the daily living, which are other factors related to the low incidence of cardiovascular disease, cancer of the lung and other diseases.

The prevailing poverty and concurrent living conditions may not always provide for an optimum stimulation of the child's psychic and creative potential, while practices concerning food preparation and hygiene foster malnutrition, therefore hindering intellectual development.

A traditional environment is relatively non-stressful, and has relatively little industrial pollution, which are additional positive features. However, the same environment exhibits high rates of childhood morbidity and mortality, and a low life expectancy at birth. Control of infectious disease and malnutrition without a comparable effort in education may result in marked population growth, a phenomenon observed in the last century."

#### HEALTH OF THE ELITE CLASS IN TRANSITIONAL NATIONS

The affluent sector of developing nations represents a small proportion of the total population and is concentrated mostly in the cities. A feature of transition is a growing middle class with health and nutritional problems similar to those of the affluent group. These problems are quite similar to or indistinguishable from problems observed in industrial countries.

"Affluent diseases" also appear in individuals of the lower classes but at a markedly lower frequency. The incidence of affected individuals and the intensity with which the problems occur in a given society depend to a great extent on the degree of transition undergone by that society.

While in the context of this paper it is not necessary to examine the causality of problems affecting elite groups, three important determinants could be mentioned: (a) the "affluent diet", rich in animal fat, sugar and salt, with a low content of fiber, and often accompanied by an excessive intake of alcohol, cigarettes and, less often, drugs; (b) a low level of physical exercise; and (c) a high level of stress in the environment.

These phenomena, as well as environmental pollution, prevail in many scientifically and technologically advanced countries; on the other hand, these countries enjoy an environment quite free of the pathogenic agents causing diarrhea and tropical diseases.

When exposed to the factors outlined above, society is at risk of developing other diseases quite different from those typical of traditional countries. For instance, women may gain excessive weight during pregnancy and could become diabetic or toxemic and give birth to overweight and postmature infants. The relative protection of children against infectious disease contrasts with an increasing appearance of coronary heart disease, obesity, hypertension, diabetes and a variety of cancers and mental illnesses.

#### TRANSITION IN THE PAST AND PRESENT

It has been found that increased exposure of persons living in traditional societies to the way of life of urban centers results in a measurable increase in the complexity of the diet. Cross cultural exposure and its aftermath have had dynamic effects since prehistoric times. Nevertheless, the era of industrial and technological revolution prompted marked and rapid changes that, owing to differences of place, time, available resources and knowledge, resulted in various outcomes.

During the industrial revolution, transitional societies exhibited a high prevalence of diseases of the gastrointestinal and respiratory tracts, communicable diseases of acute course, such as measles, and crippling chronic diseases such as tuberculosis and leprosy. The populations affected lived primarily in temperate zones that were relatively free of the so-called tropical diseases. Morbidity affected all age groups and had marked effect on the nutritional status not only of children but also of adolescents and middle-aged women. Mortality was very high in all age groups as a consequence of the interaction of malnutrition and infection and the occurrence of epidemic diseases, some of which are rare today. Thus, a high case fatality was recorded for smallpox, cholera, dysentery, typhoid, pneumonia, measles, whooping cough, diphtheria and scarlet fever. Furthermore, many deaths can be attributed to chronic diseases such as malnutrition, tuberculosis, syphilis and leprosy.

While a high morbidity also is recorded in contemporary transitional societies, there is a contrasting relatively low mortality, partly due to the worldwide control of certain infectious and nutritional diseases and partly due to the advent of vaccines and antimicrobial drugs and better medical knowledge and resources to cope with acute and chronic illness.

Since contemporary transitional societies are primarily distributed in the tropics and subtropics, morbidity is high from diseases such as malaria, schistosomiasis and hookworm, which have chronic and debilitating courses. Nutritional disorders like energy-protein malnutrition and certain vitamin deficiencies, which were epidemic until a few years ago, are still prevalent in the tropical and subtropical environment?

The differences in pathology just noted exert a profound impact on labor and economics, social behavior and the composition and structure of the family and society as a whole. For instance, high mortality in the past affected all age groups, but among the adult population, women died from childbirth and tuberculosis at a rate much higher than re-

corded today. Mortality represented an effective mechanism of selection of the fittest and more resistant individuals.

On the other hand, the chronic behavior of many tropical diseases in contemporary times accounts for a low yield of work, while at the same time the wonders of western medicine and public health interventions result in increased survival rates and a larger number of handicapped and suboptimally fit individuals. While an advance in the management of childbirth and of infantile malnutrition has had an overall beneficial effect, it also has been responsible for the survival of handicapped children, a point to strengthen the argument for developing and applying knowledge primarily for prevention and secondarily for treatment.

Reference should be made to a condition complicating the quality of life in contemporary transitional societies, which is a marked tendency toward urbanism. In modern times there has been an unparalleled exodus from the rural areas throughout the world, accompanied by the mushrooming of slums in both developing and industrial worlds. Exposures to different styles of life through (1) communication media, (2) migration to the cities, (3) changes in economic status, (4) consumerism and (5) the pattern of labor have sharply reduced the practice of breast-feeding and have induced marked changes in certain aspects of daily living. Populations are attracted by the mirage of prosperity in the city, and although their living conditions may not improve from a biological and psychological standpoint, they experience a general feeling of a fictitious better life. The massive migration observed in Latin America appears to be responsible for the maintenance of high infant mortality (increasing in some parts) in many metropolises of Latin America. Migration poses problems for housing, education, food availability, and hygiene. It also induces social pathologies among which family instability, alcoholism, and urban violence are outstanding. Migration creates a centripetal concentration of the poverty that perhaps was unnoticed before because it was scattered throughout the rural areas. A positive result

of the concentration of poverty in the "rings of misery" of large cities is that it has created a concern among scientists, planners and politicians.

It is apparent that the transitional processes that occurred in both the distant and immediate past were similar in quality and magnitude but outcomes appear to have a more negative effect on the currently developing nations.<sup>12</sup> The developed, industrial nations effected transition at a time when epidemic diseases checked an excessive population growth. In modern times, the interaction of environmental factors and modern medicine has increased survival and produced a global population explosion. Some nations have reached levels from which it seems difficult to recover.

#### TRANSITION AND NUTRITION OF LATIN AMERICAN NATIONS

Mesarovic and Pestel have proposed several schemes of classification of nations which take into consideration historic and cultural tradition, style of life, level of economic development, type of socio-political system and "the commonality of major problems which will eventually be encountered by these nations." Accordingly, the countries were grouped in ten regions and further condensed to four categories as in Table 1. Although the theoretical basis and practical usefulness of such classification can not be denied, the lumping of most developing countries into one single

**Table 1**  
**Grouping of World Nations**

| Region, area or country                               | Subgroups                                       |
|---|---|
| 1 North America                                       | Developed<br>World                              |
| 2 Western Europe                                      |   |
| 3 Japan   |   |
| 4 Australia, South Africa,<br>rest of developed world |   |
| 5 Eastern Europe, Soviet Union                        | Socialist<br>World                              |
| 10 China  |   |
| 7 North Africa, Middle East                           | Middle East<br>Rest of<br>Developing<br>Regions |
| 6 Latin America                                       |   |
| 8 Tropical Africa                                     |   |
| 9 South and Southeast Asia                            |   |

From Mesarovic and Pestel.<sup>13</sup>

**Table 2**  
**Health Indicators Useful to Characterize Level of Transition**

| Mortality per 1000 |        | Birth rate<br>per 1000 | % of all<br>deaths in<br>children<br><5 yr | First<br>cause<br>of infant<br>death | First<br>cause<br>of<br>death | Nutritional<br>status of<br>children<br><5 yr |
|--------------------|--------|------------------------|--|--------------------------------------|-------------------------------|---|
| Infant             | 1-4 yr |                        |  |                                      |                               |   |
| <20                | <1     | <25                    | <20  |                                      | C.D.*                         | Very good                                     |
| 20-39              | 1-2    | 25-29                  | 20-29                                      |                                      | C.D.                          | Good  |
| 40-59              | 3-5    | 30-34                  | 30-39                                      | Diarrhea                             |                               | Fair  |
| 60-79              | 6-9    | 35-39                  | 40-49                                      | Diarrhea                             |                               | Deficient                                     |
| 80+                | 10+    | 40+                    | 50+  | Diarrhea                             | Diarrhea                      | Very deficient                                |

\*C.D. =cardiovascular disease

group is not convenient in analyzing health and nutrition problems and in proposing strategies to cope with them. Some countries have a better potential for an eventual improvement in the quality of life. The wide spectrum of variation in health indicators in the different developing nations attests to this possibility. Thus, several developing countries are showing marked improvements in the social and economic sectors while others are evolving slowly and appear to validate the omen emanating from the reports of the Club of Rome.<sup>10</sup>

Positive changes in certain developing countries are reflected in a steady drop in infant and preschool mortalities, in a marked decrease in rates of diarrheal disease, energy-protein malnutrition, anemia and other socially-determined diseases, and in a decrease in birth rate. Furthermore, an increase in per capita food production has been recorded in many developing nations or "developing market economies" (DME) after the food and energy crisis of 1973-74.<sup>16</sup> These outcomes are a clear expression of the interaction of multiple social, economic and political factors.

Table 2 illustrates indicators frequently used to identify health accomplishments in a given nation at a particular time. Evidently health indicators depend on the quality of registration of births, deaths and diseases, which generally improves as the country evolves. Consequently, care should be taken in interpreting data for comparative study of nations in transition. An analysis of the world grain production and its relationship to the Gross National Product (GNP) by Gavan and Hathaway<sup>11</sup> revealed meaningful

differences in behavior of various countries for which data were available with regard to their response to the food crisis of 1973-75. For instance, Table 3 shows that no Latin American country is among the nations with a *very high* cost of potential intervention, a level arbitrarily set at a point greater than nine percent of the GNP. Haiti, Bolivia and El Salvador were found to have a high cost of potential intervention, a level between three and nine percent of the GNP, and three additional nations (Honduras, Colombia and Guatemala) were designated as *intermediate*. In general, food production and other indices of productivity correlate with health indicators. Thus, Table 4 compares costs of potential intervention, as percent of the GNP, with some health indicators: nations with the better ranking in terms of potential intervention exhibited the lowest child mortality and birth rate and the greatest life expectancy at birth.

Two conditions are apparent from the two tables that grouped transitional countries. One is that the nations in greatest need are concentrated in the tropical and, less frequently, subtropical regions of the Continent, a situation which also holds true for developing nations in other parts of the world. The phenomenon must be attributed to the negative effects of the tropical environment in the development of human societies.<sup>4,11</sup>

The other condition is the varying degree of nutrition and health problems among the nations listed. In the developing nations or developing market economies (DME) it was found that per capita grain production in 1975-76 was similar to or below levels at-

**Table 3**  
**Classification of Latin American Nations**  
**According to Per Capita Cereal Production and Cost of Intervention**

| Potential intervention cost in relation to GNP | Cost of intervention, % of GNP | Falling production | Increasing production   |
|--|--------------------------------|--------------------|---|
| I. Very high                                   | >9                             | —                  | —   |
| II. High                                       | >3 <8                          | Haiti<br>Bolivia   | El Salvador   |
| III. Intermediate                              | >1 <3                          | Honduras           | Colombia<br>Guatemala   |
| IV. Low  | <1                             | Panama             | Trinidad-Tobago<br>Brazil<br>Dominican Republic<br>Nicaragua<br>Surinam<br>Costa Rica |

Adapted from Gavan and Hathaway.<sup>15</sup>

tained in the pre-crisis period (1969-71) for 46 of 81 DMEs. Among "most seriously affected" countries (as defined by the United Nations Organization), 26 (70%) exhibited 1975-76 levels that were below those in 1969-71.<sup>16</sup> Interestingly enough, all the Latin American nations showing suboptimal grain production trends (El Salvador, Guatemala, Honduras, Haiti and Guyana) are located in the tropical belt.

The classification of transitional countries illustrated thus far may be useful to modify and develop strategies for action and to coordinate national and international efforts to correct nutrition and health problems.

#### STRATEGIES FOR CONTROL AND PREVENTION OF NUTRITION AND HEALTH PROBLEMS

It is quite apparent that much of what has been put to test in the field in developing nations, with the aim of correcting and preventing nutritional and health problems, can be challenged in the light of recently revised knowledge and philosophy on causality of malnutrition and poor health. Present strategies are questionable as indicated by systematic failures of interventions supported by an orthodox and purely biomedical conception. Such interventions failed to take into

environment in which the problems arise.

Consideration of new approaches to solving health problems in transitional societies requires serious and unbiased examination of current knowledge of causation. Full realization should exist that in transitional nations, growth and development patterns are different from those which led capitalistic or socialistic industrial societies to their present state.

Although the need for controlling and preventing malnutrition is of primary importance, planners must also consider prevention of the problems found in affluent societies.

With this in mind, the principal effort should be toward prevention of infectious diseases and childhood malnutrition. Table 5 lists many interventions that are believed to affect nutrition and health. It is to be noted that food distribution programs are not considered in the scheme. Prevention of nutritional and hygienic problems is achieved through education of the mother, or more correctly, by eliciting maternal potentials to apply the proper technology for child-rearing. Emphasis should be placed on the need to induce social reform in order to ensure a more equal distribution of income and other resources. On the other hand, prevention of the "diseases of affluence" demands considerable governmental action as well as a high degree of societal and individual responsibility.

**Table 4**  
**Child Mortality and Demographic Growth in**  
**Countries with Varying Cereal Production Potential and Intervention Cost**

| Cost of potential intervention in relation to GNP* | Country        | Mortality per 1000 |        | Birth rate per 1000 | Life expectancy at birth years |
|--|----------------|--------------------|--------|---------------------|--------------------------------|
|  |                | Infant             | 1-4 yr |                     |                                |
| II. High   | Bolivia        | 159                | ..     | 40                  | 48                             |
|  | Haiti          | 149                | ..     | 35                  | 50                             |
|  | El Salvador    | 59                 | 10     | 40                  | 62                             |
| III. Intermediate                                  | Honduras       | 118                | 9      | 47                  | 56                             |
|  | Guatemala      | 90                 | 26     | 43                  | 57                             |
|  | Colombia       | 63                 | 8      | 37                  | 63                             |
| IV. Low  | Brazil         | 85-95              | ..     | 37                  | 64                             |
|  | Dominican Rep. | 49                 | 7      | 45                  | 60                             |
|  | Nicaragua      | 45                 | 9      | 43                  | 55                             |
|  | Costa Rica     | 37                 | 2      | 30                  | 70                             |
|  | Panama         | 33                 | 5      | 33                  | 68                             |

\*Definition of categories according to Gavan and Hathaway.<sup>15</sup> No countries found in category I (Very High)

Table 6 summarizes three main actions required to promote optimal fetal and child nutrition and health. Evidently, many political decisions will be necessary to evoke reactions in any one aspect of the three actions conceived. Even if political commitment is made, some of the specific interventions will be difficult to implement because the "appropriate technology" is not always available.

Hence, scientists, health planners and field

workers have an urgent responsibility to develop such technology to correct or prevent specific problems. Paradoxically, the application of existing knowledge for problem-solving in developing countries often has a low priority or is received with negative academic attitudes. Much of the problem resides in improper training of human resources, which often is carried out overseas. Often, scientists return to their countries with a selfish attitude, and without consideration for the country they are supposed to serve. Since young trainees already belong to an elite group before they undergo specialization, they often work on irrelevant problems. While

**Table 5**  
**Interventions That Will Improve**  
**Nutrition and Health**

| Intervention                     | Effects   |
|----------------------------------|---|
| Water supply and excreta control | Prevention of diarrhea and parasitism   |
| Immunoprophylaxis                | Prevention of anorexia, nutrient wastage and nutrient loss due to infectious disease                              |
| Maternal education               | Reduction of maternal and child infection, improved child feeding, feeding in convalescence, and oral rehydration |
| Family planning                  | Delayed conception, increased child-spacing and improved maternal and fetal nutrition                             |
| Agriculture extension            | Increased food supply   |
| Social reform                    | Better distribution of resources and benefits   |

**Table 6**  
**Prevention of Maternal and Child Malnutrition**

|   |   |
|---|---|
| A. <i>Promotion of optimal reproduction</i> | Promotion of optimal age for conception<br>Increase in birth interval<br>Prevention of unwanted pregnancies   |
| B. <i>Antenatal care</i>                    | Promotion of maternal nutrition and hygiene<br>Prevention and treatment of infectious disease in the mother<br>Identification of "high risk" factors<br>Perinatal care              |
| C. <i>Care of child and adolescent</i>      | Promotion of nutrition and hygiene<br>Prevention and treatment of infectious disease<br>Education in health and reproduction attitudes<br>Promotion of mental health and well-being |

**Table 7**  
**Health Services Research**

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| <b>Identification of problems</b>              |
| <b>Establishment of priorities</b>             |
| <b>Identification of possible measures</b>     |
| <b>Search for the "appropriate technology"</b> |
| —mothering (maternal technology)               |
| —breast-feeding and weaning foods              |
| —primary health services                       |
| —housing                                       |
| —education                                     |
| —food production                               |
| —well being                                    |

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this training can be of some benefit in the study of national problems, the effort is often lost into reductionism, esotericism and isolationism.

To engage in problem-solving research and particularly in "health services research" (Table 7) requires an intense identification of the scientist with the national problems as well as a considerable dose of imagination to apply skills and knowledge functional in high spheres of intellectual endeavor to situations that exist at a significantly lower level.

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