

Program options for diet-related interventions to control epidemic, chronic diseases in Asia and the Pacific

The understanding and control of epidemic diet-related chronic diseases, in the context of endemic deficiency and infectious diseases, are imperative challenges facing governments and other policymakers throughout Asia and the Pacific. It is probable, as more substantial and reliable data emerge, that future benefit-cost analyses will indicate that the estimates made in this review are underestimates.

There are enormous potential benefits from policies and programs to control epidemic diet-related chronic diseases. Furthermore, the dietary and other determinants of important chronic diseases are well understood, and preventative lines of approach are already fairly well defined. Approaches that focus on the nutrition of the mother and child, from preconception to weaning, and thereafter in infants and children throughout preschool and school are strongly recommended. There is limited experience in this area in Asia and in Pacific SIDS. Few large-scale programs and evaluations have been undertaken to date. Moreover, basic data on nutrition and epidemiologic transitions is lacking in most Asian countries and in Pacific SIDS. Without such information, intervention programs will be guesswork to some extent and their results will be hard to assess. It is, however, encouraging that interventions designed to control other chronic diseases can be efficient and effective, for example, smoking control [95] and low-cost drug therapies for hypertension reduction for stroke prevention [96].

Diet-related programs, designed to control chronic diseases, can and should be highly cost-effective. In the United States, for example, a government-backed campaign that reduced national fat consumption by between 1% to 3% of total calories, saved, over a 10-year period, US\$4.1 to 12.7 billion in medical costs and lost productivity [97]. Increased physical activity, as specified in other US government-backed campaigns could significantly reduce CVD in the United States [97]. Figure 31 depicts the web of factors that influence obesity prevention. This is an example of the types of changes that can be made at national and community levels in any country. Poli-

cies that have indirect effects on chronic diseases, via improved birthweight and decreased stunting, have been discussed.*

No attempt is made here to summarize any of the policies or programs in this area that have been proposed or instituted in developed countries. There are hundreds of such initiatives, but they have limited application in Asia and the Pacific. Asian policymakers and their advisors can, of course, benefit from knowledge of initiatives undertaken in North America, western Europe, and other developed regions. However, these initiatives generally address issues at late stages in the demographic, nutrition, epidemiological transition, when traditional agricultural and food systems have mostly disappeared, and where long established food habits and reliance on domestic supply have been largely replaced by an internationalized food supply. There are exceptions, as in some Mediterranean countries. Asian developing countries and Pacific SIDS are generally in early or mid-transition. Traditional agriculture, food systems and food habits still flourish, or at least survive, in Asia and in Pacific SIDS. On the whole, it is felt that policies and programs for Asia and for Pacific SIDS should not take the initiatives of developed regions as a model.

In Asia and in Pacific SIDS, there have been few systematic attempts to use food and nutrition policy to prevent NCDs and to enhance adult health. The focus to date has been on food insecurity. Many programs have been successful, in countries as diverse as the PRC, Sri Lanka, and Thailand. Given a national commitment to address a health problem, a number of Asian countries and Pacific SIDS have the ability to make changes. The first step is creating a priority for change and the second is an examination of country-specific food prices, credit, research, and education programs that will work.

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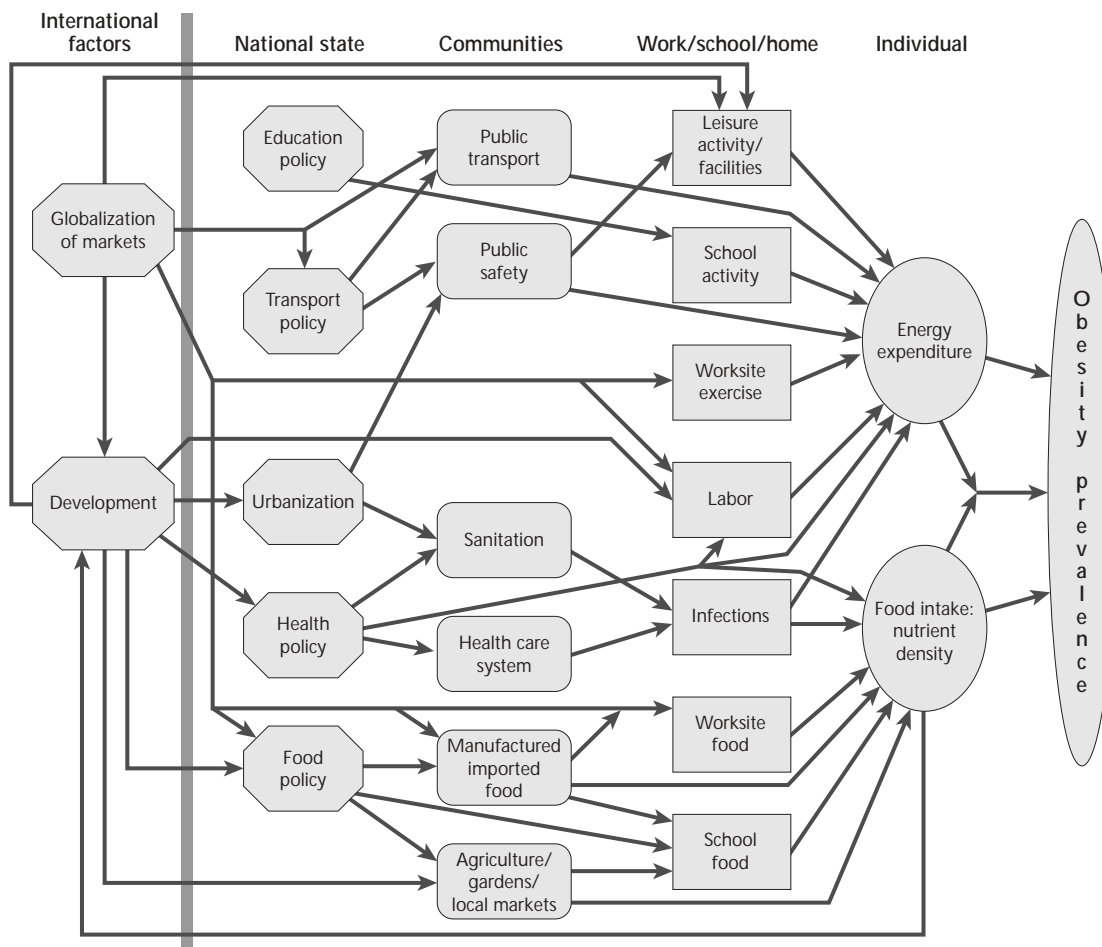


FIG. 31. Causal web of societal influences on the prevalence of obesity. Source: International Obesity Task Force, website: <http://www.iotf.org/home.html>. Figure developed by C. Ritenbaugh

The PRC is one of the few countries in Asia, indeed in the world, that has addressed nutrition and public health issues in terms of food supply systems on a national level. In 1993, the Government of the PRC organized the National Commission for Food Reform and Development. The State Council issued in 1993 the first document that addressed future food production and marketing, in terms of its significance for nutritional well-being [98]. This Council issued the first dietary guidelines for the PRC, focused on food and its production to eliminate undernutrition, dietary excess, and obesity. The Council attempted explicitly to increase production of and therefore consumption of fish, seafood, poultry, and soybeans. These guidelines point out many difficulties faced in the PRC from large pockets of undernutrition. However, they and additional sources [99] provide, a clear basis for developing and implementing food and nutrition policies to shift the composition of diets.

The coexistence of under- and overnutrition in the same household is relevant here. This challenges

the assumption that underweight and overweight are opposing public health concerns. It illustrates the need for public health programs that are able to address underweight and overweight simultaneously. If large proportions of households with an underweight member also contain an overweight member, programs targeting the reduction of underweight must be capable of addressing overweight as well. For example, public health policies which aim to reverse undernutrition for one of a household at risk, by improving either the energy density of the household food supply or household food insecurity, might have the undesired consequence of contributing to overweight and obesity in another member of that household. This has been shown in unpublished research from Chile [100], where the programs that focused on undernutrition significantly enhanced the likelihood of overweight.

The 1993 State Council guidelines [98] and the ongoing government effort in the PRC are unique. They reflect the Ministry of Agriculture's recognition of the need to achieve a more balanced diet for the

population and the role that the nutrition community is playing in this activity.

Mauritius affords another example of a large-scale integrated national program. In 1987, the Ministry of Health in Mauritius created a nationwide health promotion program, focused on the prevention of CVD. This was prompted by a high level of CVD. Price policy, other legislative and fiscal measures, and widespread education in the community, workplace, and schools and the media were used. The results were remarkable: hypertension was reduced considerably, cigarette smoking in men and women declined, heavy use of alcohol declined, mean serum cholesterol decreased, and there was increased activity beyond the baseline values [101, 102]. However, obesity levels continued to increase and there was little change in the rate of glucose intolerance. Full details of the populations and the levels of change are found elsewhere [101, 102].

Agricultural development

Changes in agricultural systems can have major effects on food supplies and therefore on diets. One of the more important negative effects of agricultural development in Asia has been attributable to the initiatives that created the supply of very cheap edible oils. The past five decades have seen a revolution in the production and processing of oilseed-based fats. After World War II, there was initially a rapid increase in the world supply of meat, meat products, and milk. This created a need for protein to provide animal feed. This in turn became the motivating factor for the oilseed revolution. One result of the work on oilseeds was the development of the cheap supply of edible oil. The impact of the increased availability of cheap fats on the human diet has been great [8]. Technological breakthroughs in the development of high yield oilseeds and in the refining of high quality vegetable oils have greatly reduced the cost of baking and frying fats, margarine, butter-like spreads, and salad and cooking oils, relative to animal-based products [103].

Major economic and political initiatives led to the development of oil crops in Southeast Asia (palm oils) as well as in the United States, Brazil, and Argentina (soybean oils). The nutrition transition in developing nations begins typically with major increases in the domestic production and imports of oilseeds and vegetable oils, rather than with increased imports of meat and milk. Vegetable oils then contribute far more energy to the human food supply than do meat or animal fats [104]. Between 1991 and 1996 to 1997, global production of vegetable fats and oils rose from 60 to 71 million tons. In contrast, the production of visible animal fats (butter and tallow) remained steady at approximately 12 million tons. Principal vegetable

oils include soybean, sunflower, rapeseed, palm, and peanut oils. With the exception of peanut oil, the global availability of each approximately tripled between 1961 and 1990. By the 1990s, soybeans accounted for the bulk of vegetable oil consumption worldwide. The production and exports of vegetable oils are promoted through direct subsidies, credit guarantees, food aid, and market development programs [104, 105]. Fortification of edible oils with any micronutrient may be inadvisable for Asia and the Pacific, because it would add an aura of healthfulness, promoting intake of products that have mixed or negative effects on health. In contrast to livestock and oilseeds, far less emphasis has been placed, worldwide and in Asia and the Pacific, on encouraging vegetable and fruit production.

Price mechanisms

All Asian and Pacific countries have policies that affect the prices and availability of food in one way or another. Governments engage in numerous direct and indirect methods to affect food prices. These range from direct subsidies, that lower purchase prices, to subsidies and taxes on various inputs, e.g., fertilizers, insecticides, and credit. Import and export policies, research programs, and many other activities have profound effects on the cost of food items.

Moreover, because many foods either complement or substitute for others, a change in the price of one item can change the consumption of other items considerably. For example, a reduction in the price of pork in the PRC increased consumption of pork and reduced consumption of other sources of protein such as wheat and rice [106]. Similarly, increasing the price of edible vegetable oils would reduce their intake and increase consumption of other foods. The importance of price policy for its effects has been on increased energy intake and consumption of a related array of staple foods in poor countries reviewed [107, 108]. Price changes can have impacts on micronutrient deficiencies, by increasing fruit and vegetable intake and other food sources of micronutrients [109–111].

Preservation of traditional diets

The Republic of Korea provides an example of the possible benefits of promotion of health through retention of traditional diets. Despite very rapid economic change and a very high level of GNP per capita, fat intake level and obesity in the Republic of Korea are approximately half of what would be expected for a country at that economic level [10]. In addition, vegetable intake is much higher than would be expected. One plausible explanation is that movements to retain

traditional diets have been strong in the Republic of Korea. A unique training program, offered by the Rural Development Administration, began in the 1980s. The Home Management Division of the Rural Living Science Institute (Suwon, Republic of Korea) has since trained thousands of extension workers to provide monthly training sessions in cooking methods for traditional Korean foods, e.g., rice, kimchi (pickled and fermented cabbage), and fermented soybean products. The program appears to reach a significant component of the newly married women in the Republic of Korea, however, exact statistics are not available [112].

Use of mass media

In the Republic of Korea, mass media campaigns, such as television programs, promote local foods, emphasizing their higher quality and the need to support local farmers. For example, The Korean Broadcasting System (KBS) First Station's daily program, 'Six o'clock My village' introduces famous products of Korean villages and promotes consumption of traditional dishes.

The Republic of Korea also promotes the concept of 'Sin-To-Bul-Yi' which translates directly as "a body and a land are not two different things." This advises people to eat foods produced of the land in which they were born and are now living.

Thailand affords another example in the use of mass media for promoting good nutrition. In Thailand, maternal and child nutrition are promoted in the context of social marketing of condoms, to protect against sexually transmitted diseases (STD) in general, and HIV-AIDS in particular. Components of this nutrition work are discussed elsewhere,* but such health promotion efforts have not yet included diet-related NCDs. Thailand in 2000 began to promote so-called "healthy Thai" diet guidelines (Tontisirin K, personal communication, 2000). This effort is in its initial stages: development of pilot projects and discussion of a nationwide initiative. It will be important to evaluate such pilot projects and to create and to evaluate similar projects in other Asian and Pacific countries, in order to establish core, NCD-related communication strategies. Other Asian examples of use of the mass media in diet-related-NCD prevention on a mass scale may exist. The example of Mauritius discussed earlier also involved the use of mass media.

Brazil is the only transitional economy for which obesity rates have declined for large segments of the adult population. For urban Brazilian women, in the upper 75% of the income level, the incidence of obesity was reduced by over 28% from 1989 to 1997 [94].

From 1992, after the disclosure of the findings of a 1989 national survey which showed that obesity, not undernutrition, was the main nutritional problem of the adult population in Brazil (Monteiro A, personal communication, 2000), several major TV networks and leading newspapers and magazines have produced, on an almost weekly basis, extensive information on the health consequences of obesity, on the importance of avoiding energy-dense diets and on increasing physical activity. This media coverage, particularly television programs targeted at the female population, has also promoted a thin (sometimes unrealistically thin) image for women. In the search for large-scale approaches to reduce and to prevent obesity, it will be important to understand this Brazilian situation thoroughly and others where there have been significant declines in obesity.

The most important causal agent in the decline of obesity in Brazil was probably the mass media coverage [94]. The first consistent and publicly directed mass intervention to control obesity in Brazil was launched in 1997, after the recorded decline (1989–96). Moreover this intervention is still restricted to some cities in São Paulo State [113].

In the United States, the 'five-a-day' program (meaning five servings of fruits and vegetables) has focused on large-scale education, along with intensive local efforts, to increase fruit and vegetable intake. This program is part of a new generation of proactive initiatives by the US National Institutes of Health. Up to 2000, its impact has been described as limited [114]. Moreover, this effort, like most US diet-related, NCD-linked initiatives, is focused on a single sector. Such limited initiatives fail to link legislation, regulations, price policies, and education.

School-based programs

Schools are an excellent setting for programs designed to protect or to improve good nutrition, together with regular physical activity. Singapore has been a leader in promoting experience and weight control in schools. In the early 1990s, Singapore recognized, as central health concerns, a marked reduction in physical fitness and increased obesity among schoolchildren. The Singapore government departments involved with school health and feeding developed the 10-year 'Trim and Fit Scheme.' This comprehensive program included training of school principals (three days each year); a health education course for teachers on exercise and nutrition; a workshop for school vendors and canteen committees; assessment of students, including identification of students at risk and overweight students; a full set of instructional materials and individual charts for each student; increased provision of water coolers; reduction of the sugar content of all

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beverages provided in schools; and increased, more rigorous school workouts for children. The result was an 11% increase, over three years, in the proportion of children assessed as physically fit and a considerable reduction in obesity. For example, during a one-year period when the same BMI standard was used for obesity, there was a decline of about 10% in the proportion of children who were deemed to be overweight (Caterson I, personal communication, 2000).

Research in the United States has shown that physical inactivity and dietary behavior, during the school-age period, have led to high obesity rates and to the early onset of many diet-related NCDs. For example, in a nationally representative sample of over 15,000 adolescents aged 11 to 18, only 40% were involved in daily physical activity programs, an additional 20% participated one to three times per week and the rest did not participate in physical education programs [115].

A project from the 1990s in elementary schools in the United States called "Child and Adolescent Trial for

Cardiovascular Health (CATCH) [116], among 4,000 children (ages 10–13), focused on the benefits of eating for a healthy heart and of vigorous physical activities. This was the largest school-based, health promotion study ever done in the United States. It involved nearly 100 ethnically and racially diverse elementary schools. It sought to determine if multicomponent health promotion efforts, targeting child behavior as well as the school environment (classrooms, school lunch, and school physical education programs) and family reinforcement, would reduce the risk of CVD in later life. The results suggested that health behavior, initiated during elementary school years, persists into early adolescence [116].

With regard to the long-term effects of fetal programming, the health risks of LBW and IUGR are exacerbated by subsequent obesity, inactivity, and poor diets. The school system is a critical component of any system to monitor incipient obesity. Of course, other elements of long-term screening and health promotion are also needed.