

in focus

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GLOBAL HEALTH IN TRANSITION

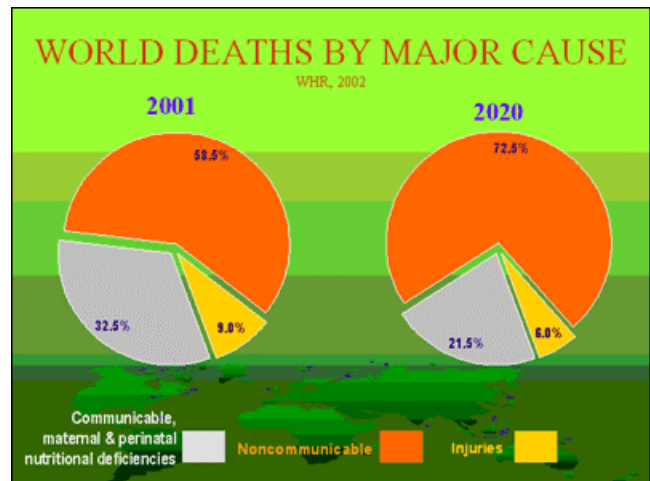
Global Health in Transition:

Focus On Prevention Can Promote Health Worldwide And Help Developing Nations Bypass Western Mistakes

by Sushma Palmer, D.Sc., Chairman, Center for Communications, Health & the Environment (CECHE), Washington, DC

The 20th century saw remarkable advances that revolutionized the health conditions of most of humanity. In industrialized countries, life expectancy increased 30 to 40 years during the century, and most low- and middle-income nations experienced even more dramatic gains in health, longevity and quality of life. Life expectancy in India, for example, doubled during the period.

Yet, the World Health Organization (WHO) estimates that more than 1 billion people, especially in developing countries, entered the 21st century without sharing much in these gains. This is, in part, because many developing countries are facing epidemics of chronic diseases *alongside* persistent, though receding, diseases of poverty, such as nutrient deficiencies, infections and childhood mortality, according to WHO.

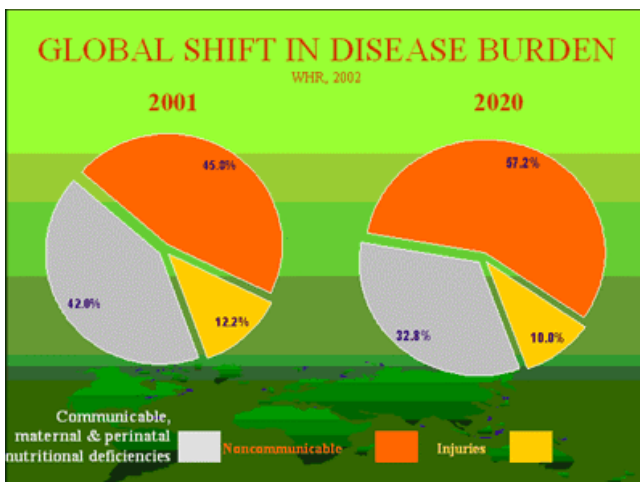


THE ADVENT OF CHRONIC DISEASES

It is now well established that diet and nutrition play a central role in both chronic and poverty-related conditions, but unfortunately even the most astute scientists and statesmen often miss this key detail. In fact, the epidemiological transition of the 1900s resulted in a major shift in leading causes of premature death and disability around the globe: from infections and malnutrition (our traditional enemies), to heart disease, cancer, Type II diabetes, obesity and other so-called chronic, lifestyle-related, or non-communicable diseases (NCDs).

NCDs are currently the leading causes of death, disability and disease worldwide, except in sub-Saharan Africa. And WHO and the World Bank project that, while the major NCDs in 2001 accounted for nearly 60 percent of all deaths, this toll will rise to 73 percent by 2020.

Similarly, according to the Global Burden of Disease analysis, which compares the burden of different diseases on the basis of disability-adjusted life years (DALYs), the burden from NCDs is expected to rise from



the 46 percent recorded in 2001 to 57 percent by 2020. This means that the rank order of the global disease burden in 2020 will also substantially change: Ischaemic heart disease will become the leading cause of disease burden, followed by cerebrovascular and chronic obstructive lung disease, among other conditions. At the same time, many of the infections and nutrient deficiencies, including those that affect child survival, have already decreased, and will become even less prevalent, according to Drs. Christopher J. L. Murray and Alan D. Lopez.

NCD MORTALITY TODAY

Today, coronary heart disease is the leading cause of death worldwide, responsible for 30 percent of all deaths; meanwhile, 79 percent of all chronic disease mortality is occurring in developing countries, according to WHO. In fact, for adults under the age of 70 in India, China and sub-Saharan Africa, the probability of dying from heart disease is already greater than for their Western peers.

And developing countries face double jeopardy.



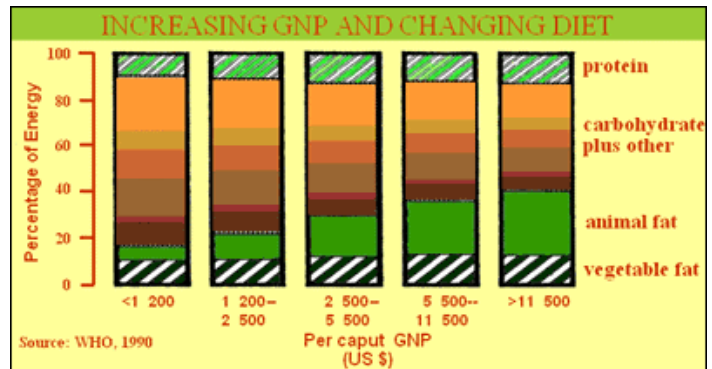
Infants who survive malnutrition, infection and low birth weight appear to be predisposed to reduced stature, Type II diabetes, and a host of respiratory, musculoskeletal and cardiovascular conditions in adulthood, according to research by D. P. J. Barker.

Urbanization is a major culprit in the NCD epidemic. More than half of the world's population is expected to be urban by the next decade, with about 70 percent of this urban population – more than 2 billion people – residing in developing countries, according to a 2002 report by B. M. Popkin.

As economies develop, populations tend to migrate to urban areas. As seen in North America, Latin America, Central and Eastern Europe, and Asia, urbanization and affluence precipitate the adoption of the mistakenly called “affluent diet,” which is high in meat, fat and sugar, and often accompanied by a lifestyle involving alcohol consumption, cigarette smoking and little physical activity. While this transition and prosperity tend to reduce malnutrition, such diets and lifestyle pose their own health risks.

DOUBLE JEOPARDY: THE “AFFLUENT DIET” AND SEDENTARISM

In fact, world trends in the past half-century demonstrate that as gross national product (GNP) rises, cereal



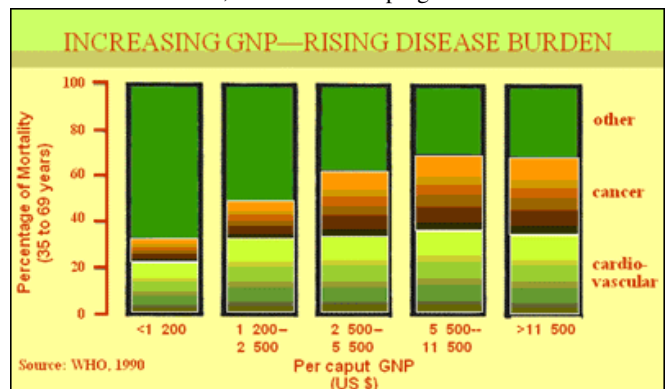
consumption decreases and the intake of animal protein, animal fats, and added fats and alcohol increases.

While the urban diet is generally more diverse than the rural diet and contains more micronutrients and animal proteins, it also has much less plant foods and fiber, and much more refined carbohydrates, processed foods, and saturated and total fat.

Meanwhile, modern technologies, such as computers, have led to more sedentary work habits. In a prospective study of some 4,000 Chinese age 20 to 45, for example, Popkin and colleagues found that, between 1995 and 2000, the proportion of adults using less energy to do the same job substantially increased. And a decrease in energy expenditure at work is significantly correlated with increased body mass index and, consequently, obesity, Popkin concluded in 2002.

Leisure activities have not only become more abundant, but also more sedentary, particularly with the penetration of modern transport and mass media, even in the developing world. Perhaps this is exaggerated, but some report that, by 1997, about 70 percent of Indian and nearly 100 percent of Chinese households owned a television set.

With such changes in diet and lifestyle, as the GNP approaches \$3,000-4,000 per capita and life expectancy exceeds 50 years, the burden of cardiovascular disease and cancer begins to mimic that of countries that have an average income that is three times greater. In other words, modest increases in prosperity in populations with a low GNP tend to create a rapid and marked increase in several chronic diseases. This pattern emerged in the United States in the 1920s, and in developing countries in the



1970s.

NCDS AROUND THE WORLD

In developing countries, NCDs tend to emerge at a younger age and initially appear among the affluent, as they are the first to embrace a “Western” lifestyle. Obesity and Type II diabetes are good examples of the challenges presented by NCDs around the globe.

Almost one-sixth of humanity – 1 billion adults – are overweight, at least 300 million of whom are obese, according to 2003 WHO data. Today, more than 60 percent of American adults are overweight, with half of them obese, and obesity rates in American children have trebled over the last two decades, revealed a 2005 U.S. Department of Agriculture/Department of Health and Human Services report.

Overweight and obesity pose a major risk not only of Type II diabetes, but also of cardiovascular disease, hypertension and stroke, and several forms of cancer. They lead to an overall reduction in the quality of life, and an increased risk of premature death. Even in many historically agrarian lower- and middle-income countries such as Mexico, Egypt, India and South Africa, obesity, Type II diabetes and cardiovascular diseases currently affect 25 to 50 percent of the population, according to studies by I. Aboderin and colleagues, and Popkin. Once predominantly a disease of the old, Type 2 diabetes has been increasing in all WHO regions, and striking younger people. And WHO projects that of the more than 300 million diabetics estimated by 2025, three-fourths will inhabit the third world.

DUALITY AND THE GLOBAL PUBLIC HEALTH AGENDA

In essence, health policy-makers in this century confront a dual challenge: halting the escalating NCD epidemics around the world, while simultaneously confronting NCDs and infectious diseases, childhood and maternal mortality, and undernutrition in developing countries.

Most industrialized nations learned too late that preventing NCDs is much more cost-effective than treating them. But, developing countries still have the luxury to learn from these mistakes.

Fortunately, chronic diseases are largely preventable, and there is strong scientific evidence that behavior modification comprising a shift to healthful diets and a healthy lifestyle can largely prevent them. In May 2004, WHO’s World Health Assembly endorsed a *Global Strategy for Diet & Physical Activity*, which outlines a comprehensive global health agenda with goals and objectives and a policy framework for achieving behavior change, the fundamental goal of which is risk reduction. The report underscores the importance of prevention of chronic diseases, stating that treatment would place an intolerable economic burden especially on developing countries, where treatment of NCDs has to compete with prevention of diseases of poverty.

In the last two decades, many countries have set national public health goals and objectives, developed a policy framework for health promotion and disease prevention, and put into place an implementation strategy

that includes health programs, public education, and monitoring and assessment. But many more nations need to develop a prevention-based approach with strong emphasis on implementation.

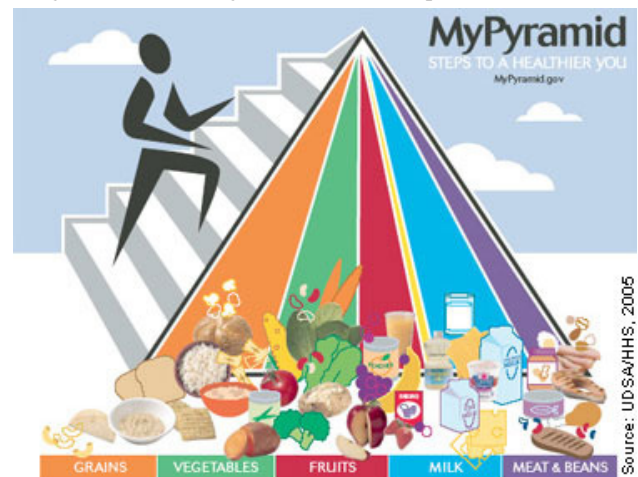
FOCUS ON PREVENTION

Prevention entails lifestyle change, which, when considering the typical “affluent diet,” boils down to:

- Eating green—a plant-based diet, high in vegetables, fruits and whole grains
- Limiting energy intake from total fats and saturated fats
- Limiting intake of free sugars and salt
- Increasing physical activity to achieve energy balance and a healthy weight
- Avoiding tobacco use
- Limiting alcohol consumption.

Of course, most guidelines (e.g., in India), also address other issues, such as undernutrition. In the past three decades, similar recommendations have come from authoritative groups in different parts of the world, and they show a general consensus on what needs to be done.

To guide consumers, dietary guidelines are often accompanied by food pyramids and other educational materials to reflect the hierarchy as well as the quantity of foods. There is also remarkable similarity in food pyramids from around the world in the last decade, and most of them target overall health, such as America’s new My Pyramid, with different colors for each food group. The Mediterranean Diet And Physical Activity Pyramid is another example of a pyramid for overall health promotion. Vegetables, fruits, grains and other plant-based foods



occupy the most space in these pyramids.

IMPLEMENTATION OF DIETARY GUIDELINES AND ITS CHALLENGES

To translate dietary guidelines into practical steps, there needs to be collaboration among the many partners and stakeholders, including nutrition and health professionals and educators, health-care providers, professional associations, the industry, media and consumers. Together, they must create a positive environment that empowers individuals, families and communities to change behavior.



For example, the food and beverage industries must be persuaded to ensure that healthy food choices are available and that there is effective food labeling to guide consumers. And the advertising and entertainment media should work with health professionals to produce persuasive and unambiguous messages for different age groups.

Naturally, there are many challenges to implementation. Policymakers tend to underestimate the effectiveness of interventions or assume that there is a long delay in achieving any measurable impact.

Sadly, WHO's global diet and physical activity strategy has confronted many barriers, and so far, less than half of WHO member states have implemented or plan to implement the recommendations. Many do not appreciate the social and economic cost of chronic diseases; for others, political priority and commitment are low; and still others simply have inadequate resources for chronic-disease prevention.

And then there are commercial pressures. For example, in several countries, including the United States, recommendations to reduce salt, sugar and fats conflict with the interests of the food and beverage industries.

“EPIDEMIC CAN BE HALTED”...PREVENTION IS THE KEY

Nevertheless, evidence exists that the NCD epidemic can be halted through prevention. For developing countries, this means philosophical and financial commitment, instituting public health policies and programs, and spending more on NCD prevention.

In North America, Western Europe, Japan and Australasia, where NCDs have dominated the national health agenda for many years, active and sustained intervention in the diets and behaviors of populations has produced dramatic decreases in risk factors and premature death rates from heart disease and some tobacco-related cancers. This was achieved by linking communities, governments, food production and processing industries. In North Karelia, Finland, for example, age-adjusted cardiovascular mortality dropped dramatically between the 1970s and 1995, mostly because dietary change, combined with community action and consumer demand, resulted in lowered plasma cholesterol and blood pressure.

South Korea has largely maintained its traditional high-vegetable, low-fat diet and reports lower rates of chronic diseases and obesity compared to other industrialized countries. So, although the overall disease burden and disability remain high in industrialized countries, the epidemic of chronic diseases can be halted, and appreciable changes can occur rapidly.

THE MAGNITUDE OF RISK REDUCTION

How much risk reduction can we anticipate with eating green and other recommended lifestyle changes?

“Eating Green” doesn't mean totally giving up animal foods. Rather, the idea revolves around a primarily plant-based diet that is low in fats and fatty animal foods, according to Dr. Michael Jacobson and colleagues at the Center for Science in the Public Interest (CSPI). In making a case for eating green, based on studies it has conducted, CSPI points out that the fats in meat, poultry and dairy cause

about 63,000 heart disease-related deaths annually in the United States, that lacto-ovo vegetarians have about 24

percent fewer fatal heart attacks than non-vegetarians, and that one additional serving of fruits or vegetables/day would lower cardiovascular disease deaths by about 16 percent. Meanwhile, according to a 1997 study sponsored by the American Institute for Cancer Research, using the best guess estimate, cancer incidence could be reduced by more than 20 percent with an average vegetable/fruit intake of 400 grams/day – and with just 100 grams more per day, it could be reduced by about 40 percent.

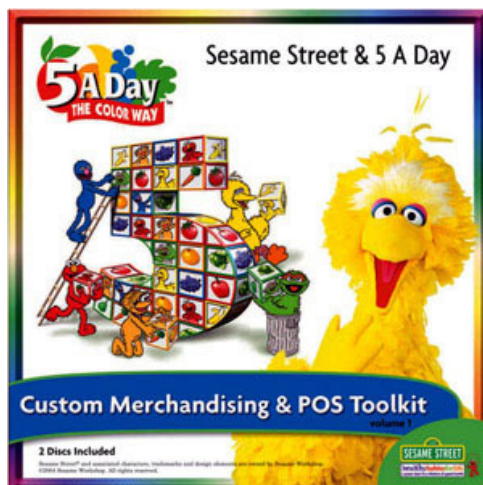
Experience in industrialized countries tells us that prevention of tobacco use alone could reduce the global disease burden by nearly 40 percent. And consuming low-saturated fats and plant-based diets, avoiding excess alcohol and being physically active could cut disease risks by an additional 30 percent, according to National Academy of Sciences data.

As for specific chronic diseases, some experts estimate that lifestyle changes could yield up to an 80 percent reduction in the risk of heart disease, a 90 percent decrease in Type II diabetes and about a 30 percent reduction in cancers.

It is harder to change food habits, but it can be done. In the United States, the print media plays a central role in promoting diet and lifestyle; leading newspapers, including *The Washington Post*, *New York Times* and *Wall Street Journal*, all carried major headlines and detailed



stories in the 1980s when the Food & Nutrition Board of the National Academy of Sciences issued reports on diet and cancer, and diet and health. This publicity caught the public eye, and helped pressure the government and Congress to develop policies and put ongoing programs into action.



Major campaigns are also underway in many parts of the world to promote vegetables and fruit, or a plant-based diet. One such vigorous program is the “5-A-Day The Color Way” campaign that started in America in the 1990s and has recently

launched in Europe. A coalition of the U.S. National Cancer Institute, the Public Benefit Foundation, the fresh produce and agriculture industries, Wal-Mart and a host of others,

including educators, television and other media, Five-a-Day promotes consumption of at least five servings of vegetables and fruits a day using clever and persuasive ads, public service announcements, and promotional materials for adults and children. It has had a small, though measurable, impact in increasing vegetable and fruit consumption in the United States, according to a 2005 article in CECHE’s *Global Health & Environment MONITOR* by E. Pivonka.

EXPERIENCE TELLS US...

The final test of how well mass media or other strategies work is whether NCD rates (e.g., obesity and the growing list of diseases it causes) go down. But interim measures are essential for several reasons: to monitor public awareness and changes in eating habits and lifestyle; to assess trends; to determine the impact of interventions; and to modify intervention techniques, if needed.

In the 21st century, developing nations must not repeat the mistakes made by the Western world as it advanced. We have a historic opportunity to halt, or at least to minimize, the epidemic of chronic diseases in developing countries. And experience in industrialized countries tells us that this can and must be done.

Companion Piece

India Faces New Health Challenges In 21st Century

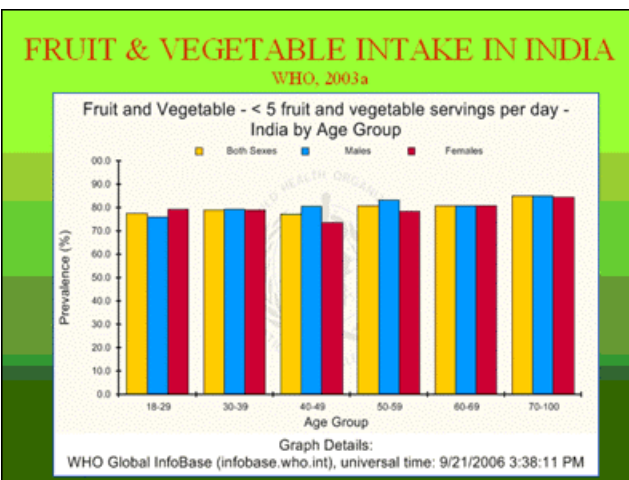
By, Sushma Palmer, D. Sc., Chairman, Center for Communications, Health and the Environment (CECHE), Washington, DC.

India continues to suffer from consequences of poverty and underdevelopment, such as malnutrition and huge numbers of child and maternal deaths. However, major economic and social changes in recent decades have brought a new brand of health problems – non-communicable lifestyle diseases among the rich, the middle class and the poor.

By the year 2020, mortality from communicable, maternal and perinatal conditions, and nutritional deficiencies is expected to fall from almost 5 million to below 3 million a year in India, according to the 1996 Global Burden of Disease series issued jointly by the World Health Organization (WHO), the World Bank and the Harvard School of Public Health. At the same time, deaths from noncommunicable diseases (NCDs) and injuries in India are projected to almost double, from about 4 million to about 8 million a year (see accompanying article, “Global Health in Transition”). Thus, India faces new challenges in this century in confronting NCDs and their onslaught.

MODERN LIFESTYLE AND FOOD PATTERNS ARE INCREASING NCDS

India’s urban population has increased more than threefold in the last 40 years to more than 250 million, and the United Nations projects that by 2025, 50 percent of Indians will live

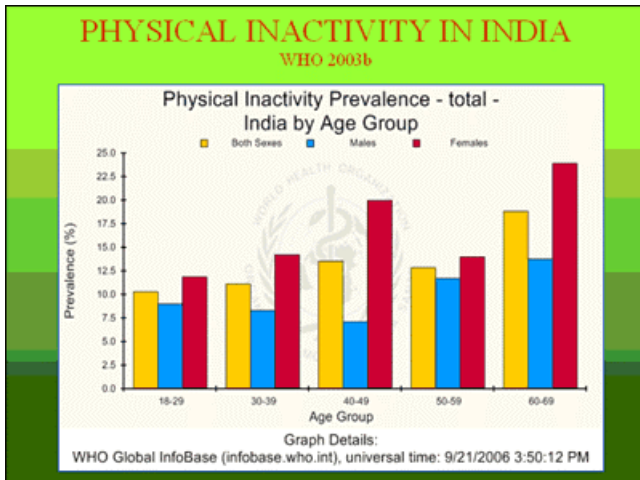


in urban areas, a breeding ground for NCDs and their lifestyle-related triggers. Meanwhile, food patterns are changing. Even a decade ago, the urban middle class was estimated to consume only three-fourths the amount of cereals per capita compared to rural populations, and to derive more than 25 percent of calories from fats, oils, and milk and milk products; and the wealthiest urbanites were estimated to obtain up to 40 percent of calories from fats compared to 18.7 percent for rural adults, according to a 1998 report published in *The Lancet*. Although most Indians remain vegetarians, according to a 2003 WHO survey of 9,000 urban and rural Indian adults, fruit and



vegetable intake fell below five servings/day in nearly 80 percent and below three servings/day in nearly 50 percent of those surveyed (see chart).

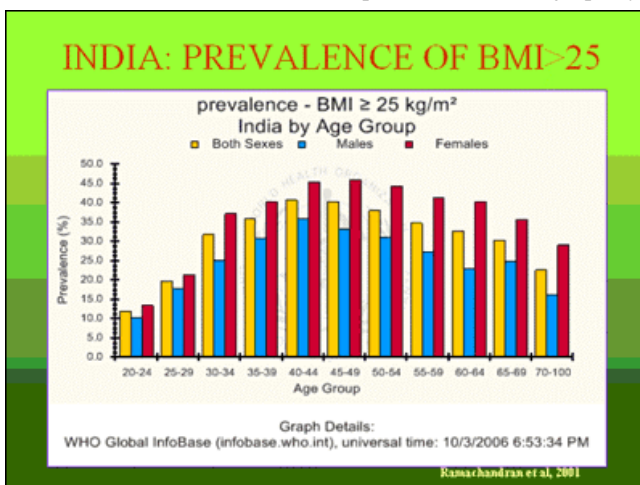
At the same time, physical activity and energy expenditure continue to decline as more and more of India's agricultural society evolves into industrialized communities. A WHO survey of more than 10,000 urban and rural Indian



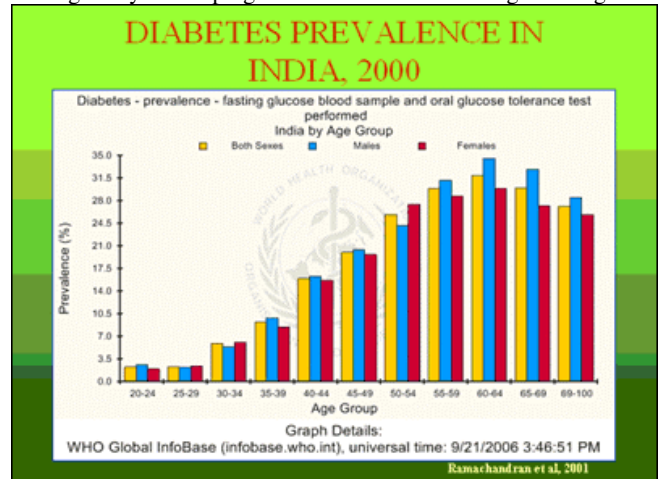
adults conducted in 2003 shows a high prevalence of physical inactivity, especially among middle-aged and older adults (see chart). Such diets and lifestyle have exacerbated the incidence of abdominal obesity, insulin resistance, Type II diabetes, hypertension, cardiovascular disease and Syndrome X in India.

A survey of 11,000 urban adults in 2000 by A. Ramachandran and colleagues showed that 35 to 45 percent of middle-aged Indians had a body mass index (BMI) that exceeded 25 (VS--suggest leaving in the chart on obesity, or perhaps combining this and next into a single chart if you prefer), and previously, in 1998, Dr. C. Gopalan estimated the prevalence of abdominal obesity to be between 20 and 30 percent and projected that it would double between 2002 and 2010 (see "Nutrition and Health Challenges" Q&A with Gopalan). As with obesity, Type II diabetes among middle-class adults and children in India is growing rapidly and is now six to 10 times more prevalent in India's urban than its rural populations (see chart).

In short, India exemplifies the double jeopardy



facing many developing countries and the challenges facing



international and national policy-makers: halting escalating NCD epidemics worldwide, while confronting NCDs alongside infectious diseases, childhood and maternal mortality, and undernutrition in developing countries.

WHAT APPROACHES WILL WORK BEST FOR INDIA?

So what can India do to reduce its risk of NCDs?

National nutrition policy in India encompasses a multifaceted approach, including chronic-disease prevention, but its overwhelming focus remains on the prevention of childhood and maternal malnutrition and infectious diseases. Furthermore, it appears that the nation has yet to take full advantage of its television and other mass media to reach the masses. This is a missed opportunity.

The vast majority of Indians now have access to radio, and, even in villages, they view TV programs. In fact, television is the most effective medium for health communications, according to data collected during CECHE's PSA Testing and Health Beliefs Program in 2000 in South India. Indians also love music. Thus, given India's low literacy rates in several areas, visual media offer a special channel to mold public opinion on nutrition and health issues. The food industry is already using TV, radio and the print media to push fast foods; they know how to attract attention, and they are making significant headway.

One way that the Ministry of Health, Door Darshan and the health sector could outsmart the industry and advertising agencies is to beat them at their own game by using visual media effectively. This means outsourcing the production of public service announcements (PSAs), television series, musicals and ads to the very ad agencies that are producing them for the fast-food industry.

The ads could feature major celebrities, Bollywood actors or sports heroes. They would need to lampoon bad eating habits and a couch-potato lifestyle; make it seem undesirable and costly in the long run to be obese; and bemoan lost years and quality of life, stressing that eating an unhealthy diet means getting sick, missing out on all the fun, dying early and not seeing your grandchildren grow up.

To succeed would require a massive and sustained national campaign, especially targeting children, because



childhood is when food habits are formed. Such a campaign would need to be supported by training more health professionals and educators in public health and in the use of mass media for health promotion.

Initiatives like CECHE's public health and nutrition scholarship program for master's degree and doctoral candidates at Lady Irwin College in New Delhi exemplify the strong motivation among nutrition students for undergoing such specialized training (<http://www.ceche.org/communications/lady-irwin/lady-irwin.html>). Meanwhile, the nonprofit's Media Training Program in India in 1998 demonstrated the advantages of (<http://www.ceche.org/communications/media1.htm>) joint training for health and media professionals in health promotion and disease prevention.

A mass media approach has worked well for tobacco control in the United States and Australia. And

CECHE's experience in 1997 and 2000 in producing and testing PSAs in Punjab and South India (put Web reference here??) tells us that it is likely to have a similar, positive impact in India, especially with support from the Nutrition Foundation of India, Lady Irwin College and other in-country organizations with health and nutrition expertise.

Looking to the impact the print media has had in promoting diet and lifestyle in industrialized countries like the United States, India could also use more "objective" means of publicity to help compel the government and national lawmakers to develop policies and put programs into action. In addition, it would behoove the country to review, and on at least some level, incorporate, such major global health-promotion campaigns as "5-A-Day The Color Way," which premiered in America and is now helping to encourage vegetable and fruit consumption across Europe via ads, PSAs and promotional materials targeting both children and adults.

Q&A

Q&A With Dr. C. Gopalan, Leading Indian Authority On Global Nutrition And Health

Dr. C. Gopalan, M.D., FRS, President, Nutrition Foundation of India, New Delhi, India



1. What are the main nutrition and health challenges facing India today?

Stunting and under-nutrition in children from poorer segments of the population and the rising incidence of obesity and Type II diabetes mellitus among the relatively affluent are major health-related issues in the country today.

2. Very early on, you recognized and publicized the growing problem of chronic diseases in the developing world. How is India faring today on the chronic-disease front, specifically with regard to: (1) diabetes; (2) heart disease; and (3) cancer?

There has been a progressive increase in the prevalence of diabetes and cardiovascular disease in the country, both in urban and in rural areas. Prevalence of cancers in India has not increased, although there has been a change in the type of cancers we are seeing. For instance, there has been a reduction in cancer of the cervix in women, but an increase in breast cancer; in men, we have seen a reduction in oral cancer, but an increase in lung cancer. The data on the time trends in these diseases is in the NFI publication, "Dual Nutrition Burden in India," which can be found on the Web at nutritionfoundationofindia.res.in

3. In a 1998 report, you estimated the prevalence of abdominal obesity in India to be between 20 and 30 percent, projecting that it will double between 2002 and 2010. Where does India stand with less than three years to go? Have your projections changed, and if so, how and why?

In urban areas, there is an increase in the prevalence of abdominal obesity even among relatively younger individuals from middle-income groups.

Time Trends in Nutritional Status of Delhi Cohort				
Age	Male		Female	
	No.	Weight (Kg)	No.	Weight (Kg)
At birth	803	2.89±0.44	561	2.79±0.38
2 yrs	834	10.3±1.3	609	9.8±1.2
12 yrs	867	30.9±5.9	625	32.2±6.7
30 yrs	886	71.8±14.0	640	59.2±13.4
Source: SK Bhargava, et al 2004				



**Current Status of Delhi Cohort:
Prevalence of Abdominal Obesity In
Middle-Class Males & Females in India**
Source: Bhargava et. al. 2004

Characteristic	Men		Women	
	No.	Value	No.	Value
Weight (Kg.)	886	71.8±14.0	640	59.2±13.4
Height (m)	886	1.70±0.06	638	1.55±0.06
BMI	886	24.9±4.3	638	24.6±5.1
Waist:Hip ratio	886	0.92±0.06	639	0.82±0.07
BMI>_25	886	47.4	638	45.5
BMI>_23	886	66.0	638	61.8
Central Obesity (%)	886	65.5	639	31
Impaired GTT	849	16	539	14

Bhargava and co-workers have shown that in urban Delhi in the 1990s even low middle-income adults who were undernourished in infancy, childhood and adolescence develop obesity -- both general and abdominal -- hypertension and diabetes by the time they are 30.

4. What has been and is being done through government programs to address India's nutrition and health issues on a national level?

There have been several initiatives to improve the nutritional status of the population between 1950-1990, including the following:

- Increasing food production - building buffer stocks
- Improving food distribution - building up the Public Distribution System
- Improving household food security through
 - Improving purchasing power
 - Food for Work programme
 - Direct or indirect food subsidy
- Food supplementation to address special needs of the vulnerable groups
- Integrated Child Development Services (ICDS), Mid-Day Meals
- Nutrition education, especially through the Food and Nutrition Board and ICDS
- Efforts of the health sector to tackle
 - Adverse health consequences of under-nutrition
 - Adverse effects of infection and unwanted fertility on the nutritional status
 - Micronutrient deficiencies and their health consequences

Review of the situation in 2000-2001, prior to the formulation of India's Tenth Five-Year Plan (Planning

Commission, 2002), showed that, while under-nutrition and micronutrient deficiencies continued to be major public health problems, over-nutrition and obesity were also emerging as major problems in many states. With this in mind, the Tenth Plan envisaged a paradigm shift from:

- Household food security and freedom from hunger to nutrition security for the family and the individual
- Untargeted food supplementation to the screening of all persons from vulnerable groups, identification of those with various grades of under-nutrition, and appropriate management
- Lack of focused interventions on the prevention of over-nutrition to the promotion of appropriate lifestyles and dietary intakes for the prevention and management of over-nutrition and obesity.

Effective implementation of focused and comprehensive interventions aimed at improving the nutritional and health status of the population was given the highest priority. It was emphasized that the increased outlays to combat the dual nutrition burden should result in improved outcomes and outputs in terms of reduction in both under- and over-nutrition.

The rationale for the paradigm shift is now understood, and efforts are underway to implement interventions to combat the dual nutrition burden. But in a vast and varied country like India with large interstate and inter-district variations in the magnitude of the nutritional problems, access to services and ability of the population to utilize available services, it is not possible to expect substantial improvement in nutritional status within a short period of five years.

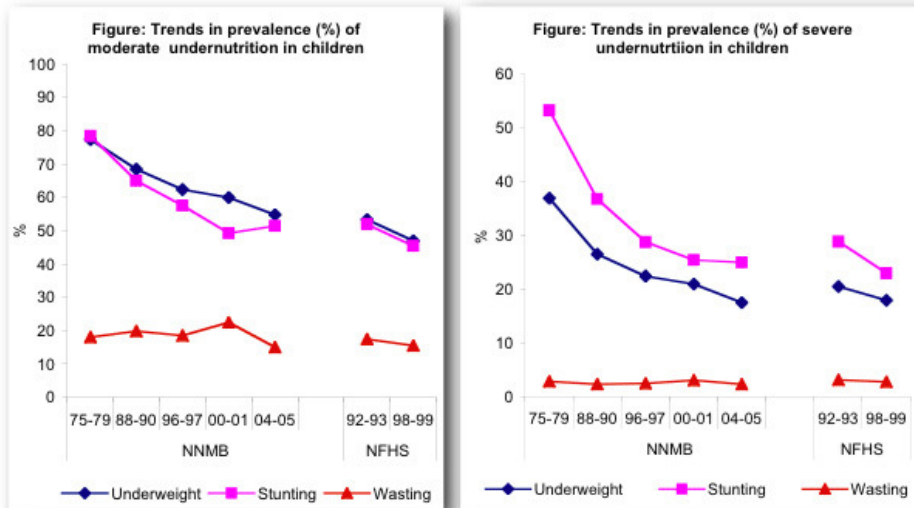
5. What are nongovernmental organizations (NGOs) doing to combat these problems? What's been the impact of these national and nonprofit initiatives to date?

NGOs like the Nutrition Foundation of India carry out field studies, which help to identify problems and solutions related to health and nutrition. The results of these studies are passed on to governmental agencies that support the implementation and evaluation of specific projects related to health and nutrition. NFI field studies and their data have contributed to the improvement of India's Goitre control and ICDS programmes, among others. Independent NGOs continue to experience difficulties in raising adequate financial support for carrying out meaningful programmes that could help identify alternative strategies.

6. What is the toll of India's nutrition and health issues on the country's children and other vulnerable populations, and how is this being addressed?

Due to the multi-pronged strategies to address under-nutrition, there has been a progressive decline in under-nutrition rates in preschool children in India. Data from





Sources: NNMB and NFHS surveys

surveys conducted by the National Nutrition Monitoring Bureau and from National Family Health surveys have shown that there has been substantial reduction in severe under-nutrition and some reduction in moderate under-nutrition in preschool children in India; however, the pace of this decline has been slow. The graphs below depict the reduction in underweight, stunting and wasting over time.

7. What, in your opinion, are the two best approaches to improve Indian's health conditions from childhood, considering school and home intervention, as well as national programs targeting different age groups?

The two best approaches are:

1. Improvement of the school system and the institution of a comprehensive school health service, which will address the practical health needs of children and their parents. Also, institution of a National Health Scout Movement in schools would sensitize students and parents to health and nutrition problems, and equip them for better citizenship.
2. An intensive programme of focused nutrition education to rural adolescent girls (school dropouts) and mothers of tomorrow to help improve childrearing and household diets, and health and nutrition education beamed to the work places of the urban middle-class to encourage them to improve their lifestyles.

The Center For Communications, Health & The Environment (CECHE)



Dr. Sushma Palmer, Program Director
 Valeska Stupak, Editorial & Design Consultant
 Shiraz Mahyera, Systems Manager
 Rohit Tote, Website Consultant

