

# food **Insight**

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*Current Topics in  
Food Safety and Nutrition*

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## Childhood "Globesity"

Recent headlines in newspapers and magazines are bringing the growing waistlines of America's children to light. But, are the overweight and obesity problems of children unique to the United States?

The trends are clear for adults around the world. In countries as diverse as Japan, Brazil, Western Samoa, and Mauritius, a similar picture can be painted: for men, women, and children, overweight and obesity are increasingly becoming the norm.

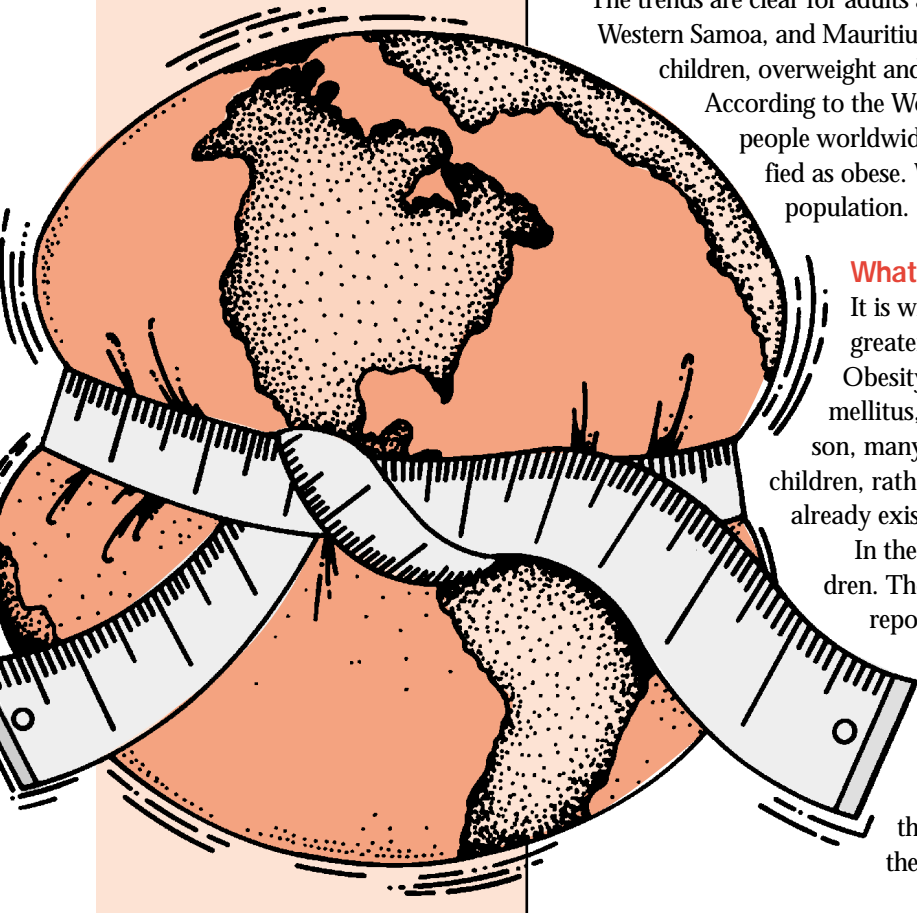
According to the World Health Organization (WHO), more than 1.2 billion people worldwide are classified as overweight and 250 million are classified as obese. Worldwide, this is equivalent to 7 percent of the adult population.

### What About the Children?

It is widely accepted that overweight or obese children have a greater risk of growing up to be overweight or obese adults. Obesity poses a major risk for serious diseases such as diabetes mellitus, cardiovascular disease, and some cancers. For this reason, many countries are looking toward prevention efforts for children, rather than focusing solely on treating the obesity that already exists.

In the United States the problem is clearly evident among children. The Centers for Disease Control and Prevention (CDC) report that 25 percent of children ages 2 to 20 years are, or are at risk of becoming, overweight or obese—twice the rate of obesity seen just a decade ago. This figure is based upon the latest growth charts released by CDC in 2000 for American children.

Around the world, the data are not always as clear but the trends are the same. Part of the problem has been that there is no consistent agreement on what defines overweight



*Continued on page 7*

# How Did They Do That?

Answers to your questions about how today's newest foods are developed



Chances are that your kitchen cabinets or refrigerator contains at least one food product that has been changed in order to improve its nutritional profile. Fat-free cheeses, reduced-fat baked goods, fortified cereals and juices, and sugar-free beverages are all examples of products that showcase the nutritional benefits of food technology. Most food product development is complicated, and these types of products listed above are no exception. In fact, more times than not it's a long, drawn-out process of research and development, testing and re-testing, and heading back to the "drawing board" for another try at development of the food product being sought. Here, in the second part of *Food Insight's* two-part series on food ingredients, we provide the answers to some of your technical food development questions. Consider it "food for thought."

**Q** Why do some sugar-free foods use more than one type of sugar substitute?

**A** Sugar substitutes, also known as "very low-calorie sweeteners" or "intense sweeteners," are often combined in order to produce a taste that most closely mimics that of real sugar and because together they produce an improved simulation of a sugar-like taste than either one could achieve alone. "By combining sweeteners, a very precise taste can be achieved, aftertastes can be controlled, and costs can be optimized," says Mark Kantor, Ph.D., associate professor in the department of nutrition and food science at the University of Maryland. Combining sweeteners can result in a synergistic effect that also allows the food manufacturer to use less total sweetener overall—up to 40 percent less—without compromising taste. Sometimes sweeteners are blended to obtain the best qualities of each, such as heat stability and the ability to retain sweetness over time. "It is possible that no one sweetener alone would result in the same desirable attributes that are achieved by using a combination," adds Kantor.

**Q** Why are some reduced-fat products not much lower in calories than their regular-fat versions?

**A** "When replacing fat in a food with something else, there is a net decrease in caloric value—after all, fat packs 9 calories per gram—more than proteins or carbohydrates" says Manfred Kroger, Ph.D., professor emeritus of food science at The Pennsylvania State University. However, there are a few reasons why reduced-fat foods aren't necessarily much lower in calories than their full-fat counterparts. First, reduced-fat products are not the same as fat-free products—some may have only a slight reduction in fat compared to a reference food. Second, although some ingredients used to reduce the amount of fat in foods are truly fat- and calorie-free (such as olestra, which is not absorbed by the body and which therefore contributes no calories), most of these ingredients contain

from 1 to 5 calories per gram. Finally, in order to make a reduced-fat food have the same weight per serving as the regular-fat version (as required by the Food and Drug Administration), other ingredients must be added to the product, or a larger portion of the product must be considered as a serving. The additional ingredients contribute calories, and naturally, a larger portion of food per serving would also increase the number of calories per serving. Here's a simple example: removing 1 gram of fat from a typical cracker would lower the number of calories by 9. However, in reality, the inclusion of a fat-replacer ingredient would add calories back, resulting in a net reduction of perhaps 4 calories per gram of fat removed.

**Q** Do reduced-fat baked goods have extra sugar added to them?

**A** Sugar does make up a larger percentage of reduced-fat and fat-free foods. Why? One reason is that when an ingredient is removed from a product, the remaining ingredients in the product become, in effect, more "concentrated." In other words, even though the total amount of sugar is the same in both the regular and reduced-fat or fat-free version of a food, the proportion of sugar in the lower-fat version is greater. In some cases, when fat is removed from a food, a carbohydrate-based fat-replacer ingredient is added, which may also contribute to a higher "sugars" value on the product's nutrition label.

**Q** What are fat substitutes made of?

**A** Fat-reduction ingredients may be classified into three categories: carbohydrate-based, protein-based, or fat-based. Polydextrose, modified food starch, maltodextrins, xanthan gum, and cellulose gel are examples of

carbohydrate-based fat replacers, which provide 0 to 4 calories per gram. They contribute bulk, creaminess, thickening, and stabilization to reduced-fat and fat-free foods such as frozen desserts, baked goods, salad dressings, and dairy products. Protein-based fat replacers, such as those from whey or egg white, are produced by simultaneously heating and blending them to make protein emulsions that mimic the creamy mouth feel of fat. Soy and corn are also sources of protein for the production of these ingredients. Protein-based fat-reduction ingredients provide 1 to 4 calories per gram, and are used in such foods as mayonnaise, salad dressings, baked goods, and a variety of dairy products. The fat-based substitutes simulate real fat in taste, texture, and mouth feel. Some of these products can be used just like regular oils, such as for frying, while others are more suitable as food ingredients. Depending on the degree to which fat-based fat-reduction ingredients are absorbed by the body, they can provide between 0 and 5 calories per gram. Olestra, salatrim, and mono- and diglycerides are examples of fat-based fat-reduction ingredients.

**Q** How is reduced-fat peanut butter made?

**A** Regular peanut butters contain a minimum of 90 percent peanuts, whereas the reduced-fat varieties contain approximately 60 percent peanuts. The peanuts that are taken out in reduced-fat products are replaced by corn syrup solids, which give "body" to the product. Unlike the peanuts that they are replacing, the corn syrup solids have no fat, thereby reducing the overall fat content of the peanut butter. (The numbers of calories in reduced-fat peanut butters are not necessarily lower than the numbers of calories in regular versions of peanut butter, however.) Soy protein, vitamins, and minerals are also added to reduced-fat

peanut butters in order to make them nutritionally equivalent to regular peanut butter.

**Q** What's in those new cholesterol-lowering spreads that makes them work?

**A** Today you can find two new types of products on the market—cholesterol-lowering spreads—and plant compounds are the keys to these products. One type of product contains a soybean extract called a plant sterol, whereas the other type contains a plant stanol ester found in small amounts in corn, wheat, and wood oils. Both types of the two new cholesterol-lowering table spreads function similarly to inhibit cholesterol absorption, decrease low-density lipoprotein (LDL) cholesterol (or "bad" cholesterol) levels, and maintain high-density lipoprotein (HDL), cholesterol (or "good" cholesterol) levels and thereby promote healthy blood cholesterol levels.

**Q** How do they get all those vitamins and minerals into fortified cereals?

**A** Adding nutrients to a cereal can cause taste and color changes in the product. This is especially true with added minerals. Since no one wants cereal that tastes like a vitamin supplement, a variety of techniques are employed in the fortification process. In general, those nutrients that are heat stable (such as vitamins A, and E and various minerals) are incorporated into the cereal itself: they're baked right in. Non-heat-stable nutrients (such as B-vitamins) are applied directly to the cereal after all heating steps are completed. Each cereal is unique—some can handle more nutrients than others can, which is one reason why fortification levels are different across all cereals.



# Making Sense of Health and Nutrition News

It seems that not a day goes by without the media reporting on some new health or nutrition study. Whether it's television, radio, the daily newspaper, or a monthly magazine, new scientific studies on food, nutrition, and health make headlines. In general, having the availability of information on such an important topic is a good thing: the more we know about our health, the better choices we can make. On the other hand, with all the abundance of health and nutrition information swirling around us, much of it delivered in small bits and pieces, it can be difficult for most of us to decide which pieces of information are accurate and important for us and our particular health and nutrition situations.

## News Bites Don't Warrant Behavior Changes

During television or radio reports on new scientific studies, it may be difficult to evaluate what you're hearing because the reports are so short and often fail to provide important facts and or place the information in an appropriate context. In most cases, it is usually best to obtain further information before you act. For example, if you saw a television report on the results of a new study that indicated that eating 25 apples a day helped prevent cancer, you would not immediately stock up on apples and start eating!

In addition, news bites such as those featured on the nightly news shows often do not provide enough information for an informed decision. In fact, you could ask many questions about a report like the

one about eating apples mentioned above. What type of study was it? Was it conducted with humans or animals? How large was the study population, and how long did it the study last? Exactly how effective was the apple-eating regimen?

Equally important is that, except in rare cases, the results of a single study are not necessarily conclusive; frequently more studies are needed to confirm those results. Therefore, until you have more complete information—either by reading more about the subject, or from your physician or health professional, look before you leap into changing diet or lifestyle.

## Tips for Evaluating Science

Written reports of new health and nutrition studies are easier to evaluate than television or radio reports because they

usually present more information. Consider the following when reading about new studies in a newspaper or magazine article:

### Study design

The way in which a study is organized and conducted can affect the results and relevance to our everyday lives.

A "preliminary" study offers just the first glimpse at what may someday become a health recommendation, whereas the results of a study that confirms the findings of many previous studies may themselves be considered recommendations of sorts.

Furthermore, studies that show associations or relationships do not necessarily indicate cause and effect (as in, "X is associated with a decreased risk for Y"). Controlled studies, which test the effects

of a specific treatment on a condition, are the only type of study that can show cause and effect. Often, the most relevant controlled experiments are clinical trials, which use human volunteer subjects. The “gold standard” of clinical trials is the double-blind, placebo-controlled study, in which the subjects are randomly assigned to either the experimental group or the control group.

### **Funding source**

In today’s confrontational environment, research has sometimes been criticized or its findings may be dismissed entirely because industry or some other interested party has funded the research. To provide sources of funding information to the public, most scientific journals require that this information be referenced at the end of the paper. Funding information is important but should not be the sole criterion for the evaluation of a scientific study.

Good scientific research is costly. This is because it is complicated, frequently time-consuming, and involves numerous people (researchers, statisticians, etc.) who are paid for their time and expertise. This is why governments, universities, industry groups, or individual companies fund most nutrition and health research. Whether funding comes from government, industry, health organizations, individuals or any other source, what is important is to view the merits of the study using the yardstick of scientific standards.

Take the example of a food ingredient. The federal government requires that companies that want to market new food ingredients must demonstrate the safety and efficacy of their products through scientific research using guidance principles established over the years jointly by government officials, academicians and industry scientists. Thus, the company must

fund studies before the government will even consider the new ingredient. If industry did not fund the research, it would not be done at all and many new products would never reach the marketplace.

The other side of the funding “coin” is the researchers themselves. Researchers have worked long and hard to obtain their academic and professional credentials and standings. As members of the broader community, they would neither risk the health of their family and friends nor would they risk losing their credibility by publishing flawed data or biased

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conclusions. Moreover, academic institutions where much research is carried out have policies in place that ensure that conflicts of interest do not play a role in the science.

Finally, funding sources for studies are always disclosed in reputable journals in which the studies are published, and media reports usually include this information as well.

What is the bottom line? The funding source should be just one of many factors that you consider when evaluating a

scientific study—not the sole consideration. The results of a good scientific study—a study that is well designed and properly conducted—will stand on their own merit, regardless of who funded the research.

### **Context**

Context pertains to the peripheral but relevant information needed to put a study’s results into perspective and make the information useful in real life. In a word, it’s the details. Because of the abbreviated nature of television and radio news reports, contextual information is rarely included in coverage of new health and nutrition studies. In the print media, context is frequently presented at the end of the article, so that only the most persistent readers will get all of the information they need to fully evaluate the credibility of the study.

Examples of context in stories and articles on nutrition and health might include the following: the amount of a food consumed or specifics about the dosage of a supplement taken, the frequency of its consumption, details about the study population (gender, age, etc.), and information about risk-benefit trade-offs as well as information on whether the study confirmed or contradicted previous studies.

When the topic of a new scientific study seems to pertain to your life or those of your family members, it’s a good idea to try to gather as much information about it as possible. The old adage, “if it sounds too good (or bad) to be true, it probably is,” applies to nutrition and food safety as well as anything else. Getting the opinions of your physician, a dietitian, or other health professional, and then taking a common-sense approach to evaluating all the information, will help you make an informed decision about whether the results of a study should influence your behavior.

# NewsBites

## Organic Food Labeling Standards Issued

On December 21, 2000, the U.S. Department of Agriculture (USDA) announced final adoption of the labeling and processing standards for organic foods.

The new standards supersede numerous different state standards. The rules ban the use of synthetic pesticides or fertilizers in the growing of organic food (although 5 percent of the pesticide tolerance allowed will be the threshold). Also excluded is the use of biotechnology or irradiation for the production of organic foods if the food is to be labeled "organic."

Under the new rules, all organic foods must come from farms or ranches certified by a state or private agency that has been accredited by USDA.

The four categories of organic labeling are as follows:

- "100 Percent Organic" must contain only organic ingredients
- "Organic" must be at least 95 percent organic by weight
- "Made with Organic Ingredients" must contain at least 70 percent organic ingredients

Processed products with less than 70 percent organic ingredients may list these ingredients but may not use the term "organic" on the front of the package.

Consumers may begin seeing an "organic" seal from USDA by the summer of 2001.

## The American Medical Association Updates Position On Food Biotechnology

During the December 2000 interim meeting of the American Medical Association (AMA), physician delegates adopted a favorable position and list of recommendations concerning crops and foods produced using biotechnology. The action followed an AMA Council on Scientific Affairs review of numerous reports and journal articles relating to agricultural and food biotechnology. The AMA found that foods produced through biotechnology "are substantially equivalent to their conventional counterparts," and stated that there is a lack of scientific justification for special labeling of foods produced through biotechnology. The AMA recommendations include having science-based federal regulation of agricultural

biotechnology and continued research of environmental impacts as well as the safety assessment of such foods. They also recommended ongoing research and development and for the government, industry, scientific and medical communities to increase consumer education and access to unbiased information on agricultural biotechnology. The report is expected to appear in the *Journal of the American Medical Association* later this year.

## Fish 101: Health Benefits Explored

Research indicates that including a variety of fish in the diet is beneficial in reducing the risk of stroke and coronary heart disease among women. This research was highlighted in a recent report in the *Journal of the American Medical Association* (Jan 17, 2001, Vol. 285, No. 3).

Experts say the health benefits associated with fish consumption far outweigh any associated food-related risks. However, the Food and Drug Administration (FDA) recently issued an advisory to women who are pregnant or of child-bearing age about the consumption of larger predatory fish species—specifically, shark, swordfish, tilefish, and king mackerel—due to the levels of methylmercury found in those fish. Conversely, the advisory recommends 12 ounces of canned fish (which is produced

from smaller fish) per week can safely be consumed by this population. The American Heart Association also suggests that "two fish servings per week are recommended to confer cardioprotective effects."

Fish contain fat commonly known as omega-3's. Researchers suggest that omega-3's reduce the risk of blood clotting or sticking to the artery walls, a condition that could result in cardiovascular disease (CVD), heart attack, and stroke. Penny Kris-Etherton, Ph.D., R.D., professor of nutrition at The Pennsylvania State University, reports, "In addition to the beneficial effects of fish consumption on CVD risk in individuals with coronary disease, a dietary pattern that includes fish and fruits and vegetables, whole grains, and legumes, lowers the risk of CVD in men without diagnosed CVD or cancer. Fish is an important food in a healthful dietary pattern."

The benefits of a diet that comprises a variety of foods, including fish, are greater than any health risk yet associated with some fish. According to Edith Howard Hogan, R.D., L.D., spokesperson for The American Dietetic Association, "canned tuna, salmon and even sardines are an inexpensive and widely available source of protein and omega-3's today."

## WHAT'S NEW at IFIC Foundation On-Line?

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## Childhood "Globesity"

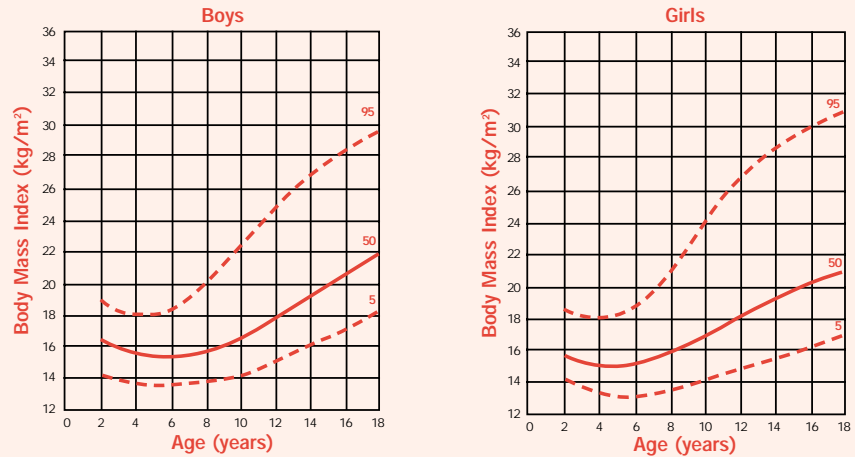
Continued from page 1

or obesity for children.

Body mass index (BMI), although useful for measuring adults, is a less effective measure for children since body composition changes dramatically with age. The growth charts from CDC can be a useful tool for health professionals, who can use them to track children's progress over time and monitor movement among percentiles that may signal risk for weight issues.

In May 2000, the *British Medical Journal* published new standards for children based on data from six countries. These standards were developed by a working group of world experts of the International Obesity Task Force, a committee of the International Association for the Study of Obesity. Countries around the world are now using these new standards to estimate the current

## Body Mass Index (BMI) for Age Chart for Boys and Girls



Source: British Medical Journal, 2000

rate of childhood obesity as well as for future surveillance.

### The Weight Gap

An increasing dichotomy can be seen in many developing countries, whose populations are facing the serious problems of hunger and malnutrition as well as obesity and overnutrition.

For example, although the majority of India's citizens are undernourished, a growing sector of mostly wealthy Indians is becoming obese. In fact, an editorial in a recent issue of the *Journal of the Indian Academy of Pediatrics* calls for the issue to be given urgent attention.

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## New IFIC Foundation Publications

Below are the newest releases from the IFIC Foundation. Single copies of most publications are available free-of-charge. For a comprehensive listing of publications or for bulk prices, please request the IFIC Foundation Publications List below.

- Publications List (MI-4010)**  
A complete list of publications and *Food Insight* reprints available from the IFIC Foundation.
- It's All About You Nutrition Communicator's Tool Kit (MI-4230)**  
A new nutrition communicator's Tool Kit to help consumers achieve healthy, active lifestyles. The Tool Kit illustrates positive, simple, and consistent nutrition and health messages and contains an "Owner's Manual for the Body," Leader's Guide, consumer video, and much more. Please send \_\_\_\_ copies at \$19.95 each, plus \$2.50 shipping and handling. Enclosed is a check for \$\_\_\_\_\_.
- Weight Loss: Finding A Weight Loss Program that Works for You (EB-2090)**  
This helpful, easy-to-use brochure provides information and check lists for evaluating weight loss programs and services and helps consumers ask the right questions to choose a safe and effective weight loss method.
- Food Biotechnology Resource Kit (MI-4080)**  
This updated and redesigned kit is a compilation of backgrounders on food biotechnology topics, including product benefits, consumer attitudes, federal safeguards and labeling, and the environment. The most recent data on consumer attitudes and government regulatory issues are included. The kit also includes positions of other leading health professional organizations, along with an extensive resource list. Please send \_\_\_\_ copies at \$10.00 each. Enclosed is a check for \$\_\_\_\_\_.
- Starting Solids: A Guide for Parents and Child Care Providers (EB-2020)**  
This updated brochure not only has an attractive, colorful new look but also has extensive information on transitioning infant feeding from breast milk and formula to solid foods. In addition, the brochure includes information from the American Red Cross on what to do if your child is choking. Co-published with the National Association of Pediatric Nurse Associates and Practitioners
- Take Charge of Your Health: A Teenager's Guide to Better Health (EB-2085)**  
A brochure that helps empower teenagers to making better choices to improve their health and lifestyles. They learn about how to change their snacking habits, increase physical activity and provides guidance to identify serving sizes. Developed by the National Institutes of Health's Weight-control Information Network.
- Caffeine and Health: Clarifying the Controversies (IR-3020)**  
This updated IFIC Review highlights new research, provides background information on caffeine and seeks to dispel misconceptions that exist about the ingredient.
- Children's Nutrition and Physical Activity Teaching Set (MI-4200)**  
A teaching set designed to help kids ages 9-15 understand the importance of combining nutrition and physical activity. The set features a 22"x34" two-sided color poster highlighting the Physical Activity Pyramid alongside the Food Guide Pyramid. Set includes the Ten Tips to Healthy Eating and Physical Activity for You brochure, reproducible slick and poster. Please send \_\_\_\_ copies at \$3.50 and \$1.50 shipping and handling.

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### Global Childhood Obesity Facts and Figures:

- Approximately 20% of Australian children and adolescents are currently overweight or obese
- Obesity is highest in the wealthiest, city-dwelling Chinese, where one in every ten children is considered obese
- In Chile, 30% of children are overweight or obese
- Only 45% of 11 year old English boys and 37% of girls report exercising two hours a week or more
- About half of European adults will be obese by 2030, partly because of an emerging epidemic of obesity among children and adolescents

Sources: Food and Agriculture Organization, World Health Organization, Australian Associated Press

"The problem is just emerging," says Dr. N. K. Arora, an epidemiologist at the All India Institute of Medical Sciences. "It is a paradoxical situation: while we have about 53 percent of children who

suffer malnutrition because of undernutrition, there is another class emerging which is suffering from a different kind of malnutrition."

Other examples of the global rise in childhood obesity include Malaysia, Japan and China. In Malaysia, where obesity was once relatively rare, a 1998 survey shows that nearly 17 percent of Malaysian boys and 8 percent of Malaysian girls are obese. In the National Survey of Primary and Middle Schools in Japan, between 1970 and 1997, obesity in 9 year-old children increased three-fold. Further, in Shanghai, China, 7 percent of children are obese, a six-fold increase in 10 years. Even so, these countries also have the responsibility of assisting those still lacking in adequate nutrition.

### Why is this Happening?

Childhood obesity, just like adult obesity, is caused by an imbalance between calories-in and calories-out. But this simple equation is confounded by complex social factors that influence how children eat,

exercise, and play.

The WHO describes obesity as a "complex condition, one with serious social and psychological dimensions, that affects virtually all age and socioeconomic groups and threatens to overwhelm both developed and developing countries." It is clear that no one solution can address this epidemic adequately. Rather, many approaches are needed.

According to James Hill, Ph.D., at the University of Colorado Center for Human Nutrition, "Childhood obesity is a complex problem that needs to be raised to a much higher level of public health priority and that lacks unified strategies to redress."

Until more public awareness, research and understanding emerge on the issue of childhood overweight and obesity, a long-term solution is not likely to emerge any time soon. One thing is certain: comprehensive strategies that consider both physical activity and nutrition in home, school, and community settings are needed for remedial actions to be effective.

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