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INNOVATIONS | NUTRITION UPDATES AND APPLICATIONS

Obesity: A Modern Epidemic

97 million American adults are overweight or obese.

One-third of obese adults are dangerously overweight.

Obesity drains $100 billion from the economy each year in the form of decreased productivity, missed days at work, increased costs of providing healthcare to these individuals, and premature deaths.

As a major contributor to preventable death and disease in the United States, overweight and obesity pose a significant public health challenge. At present, 97 million American adults are overweight or obese. The causes of obesity are complex, involving social, behavioral, cultural, physiological, metabolic, and genetic factors. Long-term change in life-style is the only safe and effective treatment. But getting a person motivated to make such changes and stick to them is challenging.

The Scope of the Problem

Despite a decade-long emphasis on low-fat, low-cholesterol diets and the need for exercise, obesity has become so prevalent in America that the Centers for Disease Control classified it as an epidemic in 1997 (1). According to the ground-breaking study on the prevalence and treatment of obesity, released by the NIH and the National Heart, Lung, & Blood Institute in June 1998, the situation is even more serious than the CDC records indicate. Approximately 55% of American adults (estimated at 97 million people) are medically overweight, and 33% (roughly 65 million) are obese. One third of obese adults (around 22 million people) are dangerously overweight (2). Concerns regarding the prevalence of obesity are not confined to adults. Currently one-third of Americans of all ages are clinically overweight, raising concerns regarding the impact of juvenile obesity on health.

Physically, Emotionally, Financially – A Costly Condition

Whether viewed from a health/quality of life, financial, or psycho-social perspective, the costs associated with obesity are significant. Obesity is a major contributor to preventable death and disease in the United States. Obesity is a contributing factor in our nation's most common chronic diseases, and is implicated in 4 of the 10 top causes of mortality (see Table 1). New evidence of the role of obesity in promoting other disease states is continually being identified.

Welcome to the **INNOVATIONS: NUTRITION UPDATES AND APPLICATIONS** newsletter brought to you by the joint partnership of Novartis Nutrition and McGraw-Hill. We hope this collection of nutrition information and reports is helpful to you as you learn more about the science of nutrition. It is our goal to produce a useful, practical resource that will keep you abreast of the latest developments in nutritional science and to provide insights into the challenges that we face in maintaining healthy life-styles in the new millennium. Each issue will focus on a specific topic of interest. If you would like to order additional copies of this newsletter for your students, please contact your local McGraw-Hill sales representative. We welcome your feedback and suggestions for future issues of the INNOVATIONS newsletter. You can provide your feedback by writing us at Nutrition, McGraw-Hill, 2460 Kerper Blvd., Dubuque, IA 52001 or at our web site: http://www.mhhe.com

TABLE 1
Changes in Leading Causes of Death During This Century in the United States

RANK	CAUSE OF DEATH	PERCENTAGE MORTALITY**
1900		
1	Pneumonia and Influenza	12
2	Tuberculosis	11
3	Diarrhea and enteritis	8
4	Heart disease	8
5	Cerebrovascular disease (stroke)	6
6	Nephritis	5
7	Accidents	4
8	Cancer	4
9	Diptheria	2
10	Meningitis	2
TODAY		
1	*Heart disease	29
2	*Cancer	26
3	*Cerebrovascular disease (stroke)	5
4	Chronic Obstructive pulmonary disease and allied conditions	4
5	Accidents and adverse effects	6
	Motor vehicle accidents	3
	All other accidents and adverse effects	3
6	Pneumonia and influenza	3
7	*Diabetes	2
8	Acquired Immunodeficiency Syndrome (AIDS)	2
9	Suicide	2
10	Homicide and legal intervention	2

*Deaths linked to obesity.
**Percentage of all deaths in that year.

To date, obesity has been recognized as a contributing factor in 44 different diseases affecting 12 body systems (see Table 2 for details).

The economic costs of obesity are well documented. Americans spend billions of dollars of disposable income each year in pursuit of trimmer waistlines, much of it on unproved therapies. Obesity drains another $100 billion from the economy each year in the form of decreased productivity, missed days at work, increased costs of providing healthcare to obese individuals, and premature deaths (3).

The social costs of obesity, while harder to quantify, are no less devastating. Many studies have shown that obese individuals encounter considerable discrimination at school, in the workplace, when applying for health and life insurance, when seeking a mate, and in a host of other social situations (4).

TABLE 2
Selected Chronic Diseases and Other Health Disorders Believed To Be Caused – or Exacerbated – by Obesity

HEART
- premature coronary artery disease
- left ventricular hypertrophy
- angina pectoris
- ventricular arrhythmia (sudden death)
- congestive heart failure

VASCULAR SYSTEM
- hypertension
- stroke
- venous stasis (edema, varicose veins, hemorrhoids, thrombosis)

RESPIRATORY SYSTEM
- obstructive sleep apnea
- Pickwickian syndrome (hypoventilation)
- secondary polycythemia (excess red blood cells due to heart/lung disease)
- right ventricular hypertrophy (can lead to heart failure)

HEPATOBILIARY SYSTEM
- gall stones and gall bladder inflammation
- fatty liver

HORMONAL and METABOLIC FUNCTION
- insulin-independent diabetes mellitus
- gout
- hyperlipidemia & hypercholesterolemia

KIDNEY
- proteinuria and, in very severe obesity, nephrosis (kidney disease)
- renal vein thrombosis

SKIN
- striae (stretch marks)
- hirsutism
- intertrigo (irritation of skin folds and surfaces caused by rubbing)
- multiple papillomas
- bacterial and yeast infections in skin fold

JOINTS, MUSCLES, and CONNECTIVE TISSUE
- osteoarthritis, especially in knees and ankles
- bone spurs on the heel
- osteoarthritis of the spine, particularly in women
- aggravation of rhumatological disorders
- aggravation of pre-existing postural defects

TABLE 2 CONTINUED

CANCERS

- among women: increased risk of cancer of the endometrium, cervix, ovaries, gallbladder, and biliary passage
- among men: increased risk of cancer of the colon, rectum, and prostate

REPRODUCTIVE and SEXUAL FUNCTION

- irregular menstruation and frequent anovulatory cycles
- reduced fertility
- increased obstetric complications, including increased risk of: toxemia, hypertension, gestational diabetes, prolonged labor, and C-section

PSYCHOSOCIAL FUNCTION

- impairment of self-image with feelings of inferiority
- social isolation
- subject to social, economic, and other types of discrimination
- increased susceptibility to psycho-neurosis
- loss of mobility
- increased employee absenteeism/decreased productivity on the job

MISCELLANEOUS

- increased intraoperative risks, both surgical and anesthetic
- increased complications during recovery from surgery
- reduced physical activity and increased accident proneness
- interference with diagnosis of other disorders

Adapted from: *Treatment of the Seriously Obese Patient*, T.A. Wadden and T.B. Van Itallie, 1992, The Guilford Press.

Patients attending weight management support groups have had total strangers tell them they are “fat,” “disgusting,” “ugly,” and so on.

Therapists working with obese patients report that political correctness, the cultural constraint against making personal or prejudicial remarks about another person's ability or body, has not been extended to obese people. Patients attending weight-management support groups report that, on occasion, other shoppers have scolded them for their food choices, removed food from their shopping carts, or they have had total strangers make derogatory remarks to them, telling them they are "fat," "disgusting," "ugly," and so on.

The general feeling seems to be that obese people choose to be fat, therefore it is OK to ridicule and shame them. The impact the stress of coping with ongoing discrimination has on emotional health and hence the overall health care costs associated with obesity is unmeasured, but suspected to be significant.

Causes

The causes of obesity are a complex mixture of psychological, environmental, and metabolic factors. The role of genetics in obesity has received a lot of press of late. Researchers agree, however, that genetics alone isn't responsible for obesity. It takes a combination of genetic predisposition and environmental factors to cause a person to gain weight. For example, the recent upsurge in the incidence of obesity in the United States is directly related to an increasingly inactive life-style coupled with increased consumption of processed foods that are rich in fat, sugar, and sodium.

On the surface, then, the treatment would seem to be easy. Exercise more, eat less. The reality is more complex. Getting people motivated to make such changes temporarily is difficult, getting them to make them permanently is a

When Trends Collide, Healthcare Costs Skyrocket

According to several major studies (5) in 1997 dollars:

- Each moderately overweight patient costs a healthcare system $88 per year
- Each obese patient costs a healthcare system $212 per year
- Treatment of weight driven diseases accounts for 1/16 of the healthcare budget.
- The rate of obesity is increasing by 2.5% to 3% per year, or roughly 30% per decade.

Clearly, controlling body weight and weight-driven disease is essential to controlling healthcare costs.

It appears that the situation may well get worse before it gets better. According to HCFA (pronounced hickfA), the federal Health Care Finance Administration estimates healthcare costs – including those associated with obesity – will double by 2007. Some of the projected increase in costs is due to inflation and increased use of technology. The most significant cause of these increasing costs, however, is an aging population.

As Americans are growing heavier, they are also growing old. By the year 2000 the average age of Americans will be 50 years and up (6, 7). As people age, the health-risk factors associated with the life-style they adopted during their younger years begins to manifest as chronic disease. Given this fact and the fact the greatest rates of obesity are typically seen during late middle age and in senior citizens, there is considerable concern that the combination of increasing obesity and increasing age will strain healthcare budgets to the breaking point.

No comprehensive effort has been made to diagnose and treat obesity.

When physicians do encourage weight loss, it often consists of little more than a brief lecture on the health benefits of weight management.

significant challenge. Researchers evaluating the data in the National Weight Control Registry (a collection of data, techniques, and tips culled from successful weight managers), and Ann M. Fletcher, MS, RD, author of the best seller *Thin for Life: 10 Keys to Success from People Who Have Lost Weight & Kept It Off*, found few successful weight managers who triumphed on their first attempt. Many people tried to lose weight 5-6 times before achieving success. Many dieters were successful, not because they finally found the right diet, but because they finally "got it." "Getting it" was different for each person, but it always involved personal insights into the factors that had caused that person to gain weight in the first place before he/she could select the tools which would help him/her to make long-term life-style changes (8).

Breaking the Weight Gain Trend – the Role of Evidence-Based Research

Although obesity has been recognized as a serious public health challenge for many years, no comprehensive effort has been made to diagnose and treat it. In fact, many physicians report they avoid discussions of weight management for a variety of reasons, including fear of upsetting the patient, pessimism about the patient's ability to achieve long-term weight management success, because they have limited time to educate patients, or because they know they lack the expertise to motivate a patient to make the necessary life-style changes. When physicians do encourage weight loss, it often consists of little more than a brief lecture on the health benefits of weight management and distribution of a printed diet.

Evidence-based research is a new technique being used in a variety of medical disciplines to improve formulation of healthcare guidelines, to help physicians rethink their approach to patient care, and is finally being applied to weight management. Rather than developing guidelines based on theoretical goals derived from laboratory research, evidence-based research uses actual clinical data to develop diagnostic

and treatment guidelines that can be used in clinical settings. Healthcare experts are cautiously optimistic that this approach will help identify better ways to manage weight.

In May 1995, the National Heart, Lung and Blood Institute's Obesity Education Initiative and the National Institute of Diabetes, Digestive and Kidney Diseases formed an expert panel on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults. The panel initially reviewed hundreds of studies spanning seventeen years of obesity research. Eventually the data from 236 carefully designed randomized controlled studies was combined, analyzed, and used to create a report entitled Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults. Based on the evidence culled from the reviewed studies, this report provides healthcare professionals with detailed guidelines for assessing a person's weight, determining his/her potential for weight-related health risks, setting weight management goals, and preferred treatment techniques (2). Following are highlights of these guidelines, several of which will be discussed in more detail in future issues.

Individuals with a Body Mass Index greater than 25 are considered over-weight.

Guideline Highlights

Evaluation of Body Weight

Individuals with a Body Mass Index greater than 30 are considered obese.

Rather than using the standard height/weight charts to determine overweight, healthcare workers should adopt the Body Mass Index (BMI) in conjunction with waist circumference. Individuals with a BMI $\geq$ 25 are considered overweight, those with a BMI $\geq$ 30 are considered obese.

Weight-Management Goals

- at a minimum, prevent further weight gain
- reduce excess body weight
- maintain a lower body weight long term

Weight Management Therapy

A variety of techniques have been effective

- low-calorie (800-1500 calories per day), low fat (< 30% fat) diets
- increased physical activity
- behavior modification therapy
- weight-management drugs or surgery may be appropriate in a limited number of carefully selected patients who have not responded adequately to conventional therapy and who have significant health risks associated with their excess body weight.

Maintenance

- calorie-controlled diet
- regular exercise
- ongoing behavior therapy/support

Guidelines Are Great, But Can They Motivate?

Overall, healthcare practitioners are appreciative of the new NHLB weight-management guidelines and are anxious to put them to use. Still, they question how well they will be received by the patients. Public health experts are asking the same question while simultaneously doing a little soul-searching about the way they have traditionally delivered health messages. Taking a cue from behaviorists, these experts acknowledge that it is difficult to get people to give up a behavior if they don't have an acceptable behavior to substitute. The new idea is to accentuate the positive. In other words, use positive messages to shape health awareness and put the focus on exciting new eating styles.

Just Say "Yes"! The Power of a Positive Message

Many healthcare experts believe part of the reason Americans ignore many public health warnings is that they have become desensitized to the endless stream of healthcare warnings and advice phrased in negative terms, and that people would be more motivated if the messages were positive. For instance, instead of saying "eat less fat," "eat smaller portions," "eat less cholesterol," all of which have the ring of self-denial to them, what if the messages focused on foods to indulge in. For example, "eat an array of colorful fruits and vegetables each week," “experiment with different types of flavorful whole

grains, fish and chicken." Along these same lines, instead of warning people to limit their trips to fast-food establishments and the like, what if health messages focused on whetting the public's appetite for healthy cuisine by focusing on delicious options – not fat and calorie savings. In many urban areas the new fish houses are doing just that.

Fat-wise feasts are easily achieved with fish, giving the diners the satisfaction of having eaten an exotic meal without the calories, fat, or cholesterol to show for it.

From Steak House to Fish House

Steak houses, family friendly buffet-style eateries, and fat-filled fast-food establishments remain staples of the American restaurant scene. But trendier restaurants featuring exotically prepared healthy cuisine are gaining popularity, particularly in metropolitan areas (9).

One of the most interesting trends is the growing popularity of fine dining establishments dedicated to fish. The fare served in these restaurants is far from the fish and chips, surf and turf genera common in national seafood chains. For the past seven years, San Francisco, already known for its numerous seafood restaurants, has been home to Aqua, a restaurant serving nothing but exotically prepared fish. Originally, industry analysts didn't give Aqua much of a chance. They felt its unique menu would attract curious and adventurous diners once or twice, but repeat business would be had to come by. Nearly a decade later reservations are still hard to come by and similar establishments in New York and at EPCOT in Orlando, Florida have also beaten the odds.

When asked what accounts for the growing popularity of fish restaurants, John Clark, head chef of the Coral Reef restaurant at EPCOT, asserted the popularity of fish reflects the growing health consciousness of the American consumer coupled with an increasing acceptance of ethnic and nouvelle cuisine. In addition to being naturally leaner than red meats or pork, fish affords diners a greater variety of menu options than does poultry. When diners opt for fish, there is a wide variety of fish species, each with its own unique taste and texture, from which to choose, whereas diners choosing poultry are usually limited to chicken. Versatile as it is, chicken is still chicken. Furthermore, many fish – particularly the firmer textured ones like salmon, tuna, and swordfish – can be prepared using many different cooking techniques and dozens of different ethnic interpretations. Hence, festive, fat-wise feasts are easily achieved with fish, giving diners the satisfaction of having eaten an exotic meal without the calories, fat, or cholesterol to show for it.

As the excerpts (see below) of chef Clark's creative menus indicate, fish can be used to reinterpret an American classic like a club sandwich, capture the essence of fusion cuisine, as in the Indonesian-inspired tuna dish, or used as the centerpiece of a special-occasion menu.

- Salmon Club – a club "sandwich" made of three different types of salmon layered with red onions, cucumbers, and spinach.
- Pan-Seared Tuna – served on tier of coconut rice with oven-dried pineapple rings and papaya glaze.
- Grilled salmon – topped with a red wine glaze accompanied by a ragout of exotic mushrooms, and mustard mashed potatoes.

Recipes for grilled tuna with low-calorie coconut rice and grilled salmon feast can be found on the NutriQuest web site.

To learn more about your overall health, weight management, and nutritional status, visit the following McGraw-Hill web sites:
Personal Health sites at:
http://www.mhhe.com/hper/health/personalhealth/labs/
http://www.mhhe.com/hper/health/personalhealth/labs/WeightManagement/index.mht

Nutrition sites at:
http://www.mhhe.com/hper/nutrition/
http://www.mhhe.com/hper/nutrition/nutriquest
http://www.mhhe.com/hper/nutrition/wardlaw

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