The Obesity Epidemic, Part 2: Nursing Assessment and Intervention

A framework to guide patient care.

OVERVIEW: Although there are many gaps in our understanding of the mechanisms underlying obesity, several nursing strategies have proven effective in combating this public health crisis. This article, the second in a two-part series, presents a theoretical framework to guide nursing assessment of affected patients and their families, thereby informing intervention. The authors discuss the effects of stigma and bias on the treatment of obesity; how to conduct a thorough assessment of an obese patient; the effectiveness of the most common lifestyle, pharmacologic, and surgical interventions for obesity; and issues to consider in the treatment of obese children. Part 1, which appeared in last month's issue, provided background on the epidemic; defined terms used in obesity treatment; and described pathophysiologic, psychological, and social factors that influence weight control.

Keywords: assessment, bariatric surgery, lifestyle interventions, obesity, obesity management, overweight, pharmacologic interventions, physical activity, stigma, weight control

Obesity management typically focuses on the obese individual. As discussed in part 1 of this series, however, obesity is the product of multiple genetic, sociocultural, socioeconomic, and environmental factors. This understanding of obesity as a multifaceted problem draws upon theories that focus on complexity, ecology, and socioeconomic context.[1-5] Other frameworks used to appreciate the underpinnings of the obesity epidemic have emphasized the need for nurses to examine their personal beliefs, values, and stereotypical assumptions, with the goal of adopting a more open and nonjudgmental approach and of showing obese patients respect, rather than blaming them for their size or behavior. Such perspectives focus on empowering obese patients to attain a healthy lifestyle and manage their weight by modifying the ways in which they interact with their environment and with other people.[6]

In this article, the second in a two-part series on obesity, we approach the assessment and care of obese patients and their families from within a theoretical framework that draws on these perspectives. We discuss the impact of stigma on the treatment of obesity and describe how to conduct a thorough, unbiased assessment of an obese patient. We review current evidence on the most common lifestyle, pharmacologic, and surgical interventions for obesity, and outline important issues to consider in the treatment of obese children.

STIGMA AND BIAS

Obesity is often associated with a lack of willpower and viewed as the result of overeating. Obese individuals are often perceived as lacking in self-discipline, lazy, or less intelligent than those who are not obese.[7] Bias against obese people is widespread and often takes the form of discrimination in work and educational settings.[7]

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A comprehensive review of obesity bias among health care providers (nurses, dietitians, psychologists, and obesity treatment experts) found that all groups had negative perceptions of and attitudes toward obese people.[8] Although most studies that considered patient care found that the bias did not appear to affect delivery of health care,[8] considerable research has documented the negative effects of health care provider bias on the health of obese patients, including increased vulnerability to depression, low self-esteem, eating disorders, and avoidance of exercise and health maintenance.[7]

In addition, health care facilities are sometimes physically unprepared to handle the needs of obese patients. In an effort to improve this situation, the Ohio State University Medical Center developed the RESPECT Model, which is intended to foster compassionate care for obese patients. In this model, each letter in the word "RESPECT" emphasizes an important aspect of sensitive care[9]:

- R–rapport grounded in courteous and considerate communication and behavior
- E–environments that can be used effectively, safely, and comfortably with bariatric patients (for example, blood pressure cuffs, chairs, scales, stretchers, tables, and beds that accommodate obese patients)
- S–safety of patients and staff
- P–privacy of patients, in keeping with an overall consideration of patient dignity
- E–encouragement of patients to set realistic goals
- C–caring and compassion, as opposed to victim-blaming behavior
- T–tact in dealing with all patients, family members, and other professionals involved in the care of bariatric patients

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When fully applied, this model can foster respectful, professional relationships within an environment that is suited to optimum health care delivery.

ASSESSING ADULTS

Discussing weight with a patient can be challenging. Some researchers have found that terms like "weight,"

"excess weight," or "body mass index (BMI)" are more acceptable than terms such as "fatness," "excess fat," "obesity," or "large size."[10] As obesity is a multifaceted and complex health problem, the nursing assessment needs to seek answers to multiple lifestyle questions. For example, it is important to determine whether obese patients perceive their weight to be a problem or have a desire to change.

Numerous medications can contribute to weight gain and make losing weight more difficult.

The initial assessment should acknowledge that an individual's genetic makeup has an impact on weight control. A brief family genogram that identifies any weight control problems among the patient's parents, siblings, or offspring should be completed. An individual with a strong family history of obesity may feel that dieting is less likely to be successful but may be open to making small changes to improve her or his health. Other aspects of the patient's family and personal medical history may help in the detection of obesity-associated risk factors, such as those for hypertension, diabetes, heart disease, and cancer. Health habits, including tobacco use, exposure to secondhand smoke, diet, drug and alcohol use, and current level of physical activity, should be documented.

A thorough medication history is particularly important in assessing obese patients; numerous medications can contribute to weight gain and make losing weight more difficult (for examples, see Table 1[11-17]). Patient education should reinforce the importance of taking necessary medications, even if they are associated with weight gain, and should address lifestyle modifications that can help minimize any weight gain associated with such drugs. Treatment regimens must always be individualized and, for certain patients, prescribers may consider alternative medications associated with less weight gain.

Physical assessment. Blood pressure, weight, height, and BMI are key in assessing all patients. (Although patient weight is a key assessment, if the weigh-in creates considerable psychological distress, it may be skipped at some visits.) When assessing obese patients, it's also important to determine fasting blood sugar, the lipid profile, and waist circumference, as these factors substantially affect the risk of obesity complications. A waist circumference over 35 inches in women and 40 inches in men is associated with increased abdominal visceral fat and has been implicated in the development of type 2 diabetes, hypertension, cardiovascular disease, and nonalcoholic fatty liver disease, the most common cause of chronic liver disease in the United States.[18-20] For people of Asian descent, lower measures of waist circumference are recommended because the risk of type 2 diabetes is higher in this population.[21] Evaluate patients' joints and muscles for function and mobility, noting both previous injuries and potential for injury.

Eating behavior assessment relies on accurate dietary recall. One of the best and simplest ways to obtain an accurate picture of dietary intake is to ask the patient to maintain a three-to-seven-day journal, documenting the following over that specific period:

- What food and drink were consumed?
- When and where were they consumed?
- What were the patient's emotions at the time?

A form or journal with exact instructions will make food recall easier and possibly more accurate. Reviewing dietary intake with patients can increase their understanding of eating behavior and serve as the basis for dietary modifications. The journal may reveal patterns that provide insight into the patient's emotions and subsequent eating behavior. Asking patients to discuss the role of habits and social factors in eating can help them gain insight into food decisions; highlighting the types of beverages consumed and the number of times fast food is eaten might prove useful in this context.

OBESITY INTERVENTIONS FOR ADULTS

Obese individuals may benefit from aggressive behavioral interventions that concentrate on reducing caloric intake and increasing physical activity.

Lifestyle interventions. Behavioral approaches to losing weight include tracking what is eaten in a journal, eating more slowly, and limiting portion sizes. A Cochrane review of 36 studies that compared the effects of weight loss strategies in overweight or obese adults found that any type of behavioral intervention for weight loss was more effective than no treatment, and any type of behavioral intervention plus diet and exercise was more effective than diet and exercise alone.[22]

Today, smartphone and computer technology offers access to free and low-cost applications that can assist patients in monitoring their dietary intake and physical activity. Many such programs calculate calories, providing immediate feedback, and generate individualized reminders. Advise patients to search their application or Web store for "weight loss" applications. They should look for an application with the following features:

- a large database of foods with nutritional information for various serving sizes
- a bar scanner that allows users to add information about prepared foods to their smartphone's database

Table 1. Medications Associated with Weight Gain

Type	Drug Class	Example	Comments
Anticonvulsants		• Valproic acid (Depakene, Stavzor) • Pregabalin (Lyrica)	Associated with significant weight gain.
Antidepressants	MAOIs	• Phenelzine (Nardil) • Isocarboxazid (Marplan)	MAOIs appear to cause less weight gain than TCAs, with phenelzine associated with more weight gain than isocarboxazid.[11]
	TCAs	• Amitriptyline • Imipramine (Tofranil)	With TCAs, average weight gain is 0.4 to 4.12 kg (0.88 to 9.08 lbs.) per month; amitriptyline and imipramine are associated with greatest weight gain.[11]
	SSRIs	• Paroxetine (Paxil and others) • Sertraline (Zoloft) • Fluoxetine (Prozac, Sarafem) • Citalopram (Celexa)	SSRIs may also cause weight gain if used for more than six months.[11]
Antidiabetic agents	Insulin	• Lispro (Humalog) • Aspart (NovoLog)	Weight gain is a potential secondary effect if eating behavior doesn't adapt to the more efficient processing of glucose that occurs with insulin therapy.
	Meglitinides	• Nateglinide (Starlix) • Repaglinide (Prandin)	A Cochrane review of 15 studies found that meglitinides tend to cause more weight gain than metformin—up to 3 kg (6.61 lbs.) in three months.[12]
	Sulfonylureas	• Glipizide (Glucotrol)	Sulfonylurea monotherapy is associated with a weight gain of about 1.5 to 2.5 kg (3.3 to 5.51 lbs.) in the first year and then tends to level off.[13]
	Thiazolidinediones	• Pioglitazone (Actos)	May cause fluid retention and subcutaneous adipose tissue, leading to mild weight gain.
Antihypertensives	β-blockers	• Metoprolol (Lopressor)	In a review of eight studies that spanned six months to 10 years and included 7,048 patients, of whom 3,205 received β-blocker therapy, β-blockers were associated with a median weight gain of 1.2 kg (2.64 lbs.).[14]
	α-blockers	• Clonidine (Catapres and others) • Prazosin (Minipress) • Terazosin (Hytrin)	α-blockers inhibit the sympathetic nervous system, which can reduce the metabolic rate and cause weight gain.
	ACEIs	• Enalapril (Vasotec) • Lisinopril (Prinivil, Zestril) • Ramipril (Altace)	May cause rapid weight gain in rare cases, may cause weight loss in others.
Oral antihistamines		• Cetirizine (Zyrtec) tablets and syrup	In one study, cetirizine was associated with a weight gain of more than 1 kg over three weeks.[15]
Mood stabilizers		• Lithium (Lithobid)	Risk of weight gain is high with lithium and lower with carbamazepine, lamotrigine, and oxcarbazepine.[16]
Atypical antipsychotics		• Clozapine (Clozaril and others) • Olanzapine (Zyprexa)	Clozapine and olanzapine are associated with very significant weight gain; aripiprazole, amisulpride, and ziprasidone are less likely to cause weight gain.[16]
Oral corticosteroids		• Prednisone	Long-term oral corticosteroid use is associated with weight gain, with effect depending on dose and duration of use.
Hormonal contraceptives	Injectable birth control	• Medroxyprogesterone (Depo-Provera)	Long-term use is associated with weight gain, with nearly 38% gaining > 10 lbs. after 24 months.[17]

ACEIs = angiotensin-converting enzyme inhibitors; MAOIs = monoamine oxidase inhibitors; SSRIs = selective serotonin reuptake inhibitors; TCAs = tricyclic antidepressants.

- a calorie tracker that is easy to use
- the ability to track other nutrients, such as carbohydrates, protein, and calcium
- the ability to interface with activity applications

The Academy of Nutrition and Dietetics rates current applications; their reviews can be found at: http://bit.ly/1D7TWbi.

Several supplements have been the subject of weight loss trials. Green tea, for example, is thought to enhance energy expenditure and fat oxidation. One meta-analysis examined 11 trials that studied the effects of green tea on weight loss over at least 12 weeks.[30] The researchers concluded that green tea, in various doses, had a small but significant effect on weight loss compared with placebo (a mean change of –1.31 kg, or –2.88 lbs.; 95% confidence interval [CI], –2.05 to –0.57, $P < 0.001$).

A systematic review found that, even in the absence of dietary changes, high-intensity exercise yielded greater weight loss than lower-intensity exercise.

Although a systematic review of long-term weight loss maintenance found that most people regain over 50% of lost weight within a year,[23] even partially sustained weight loss can substantially reduce health risks. The Diabetes Prevention Program clinical trial demonstrated that even a modest weight loss of 7% of body weight (or a 14-lb. loss for a 200-lb. person), plus exercise, can reduce triglyceride levels, fasting glucose levels, and the risk of developing diabetes over a 2.8-year follow-up period.[24, 25]

Commercial diets. The weight loss industry generates an estimated $60 billion in revenue per year.[26] Evidence of the efficacy of popular profit-based commercial programs is limited. Liquid meal replacements[10] and commercial programs like Optifast and Weight Watchers[27] have shown short-term, limited effectiveness. One well-planned clinical trial compared the Atkins, Ornish, Weight Watchers, and Zone diets.[28] Each of the diet groups began with 40 participants; the mean attrition rate was 42% after 12 months. All four diet groups had small but significant weight losses, with no statistically significant differences in this regard ($P = 0.40$). In each diet group, approximately 25% of participants sustained a 5% weight loss for one year. There was a significant correlation between total weight loss and self-reported adherence to any of the four diets ($r = 0.60$; $P < 0.001$). The upper one-third of participants who recorded their intake lost an average of 7% of body weight.

Although popular diets may vary considerably, their primary purpose is to lower caloric intake, and success is achieved through adherence. For obese patients, a reduction of 500 to 1,000 calories per day results in a weight loss of 1 to 2 lbs. per week.[29] Calorie restriction is predominantly accomplished by avoiding alcohol, sugary drinks, and foods that are high in fat, sugar, and carbohydrates (such as fast food), while increasing consumption of vegetables, fruits, whole grains, and fiber. Many weight loss plans also provide social support through counselor-led groups, individual counseling, or customized food delivery.

Chitosan, a substance made from the exoskeleton of crustaceans, is believed to bind to lipids and prevent their absorption from the gastrointestinal tract.[31] A Cochrane review examined 15 studies of at least a four-week duration that evaluated chitosan as a weight loss agent. Results indicated that subjects who consumed chitosan lost significantly more weight than those who consumed the placebo, with a mean difference of –1.7 kg, or –3.75 lbs. (95% CI, –2.1 to –1.3, $P < 0.00001$). Results among the studies were variable, however, and the review's authors felt that many of the studies were of poor quality.[32]

In a meta-analysis on the use of calcium as a weight-loss aid, calcium was associated with a small but significantly greater weight loss than placebo (–0.74 kg, or –1.63 lbs.; 95% CI, –1 to 0.48).[33] The P value was not reported, but heterogeneity was negligible ($I^2 = 0\%$). Overall, there is insufficient high-quality research to support the use of supplements as a weight-loss aid.

Physical activity. Although some patients may not be ready to make bigger commitments to lifestyle modification, research suggests that motivational interviewing—a counseling style that explores ambivalence and is moderately effective in the area of addictions—can help patients lose weight when performed by a trained health care provider.[34, 35] Nurses, by virtue of their educational background in communication techniques, are well equipped to use it.[34] The motivational interviewer uses nonjudgmental questioning and reflective listening to determine patients' beliefs and values. Using this approach, nurses can assess patients' readiness to change, provide weight loss counseling, and encourage patients to become more physically active.

The nurse conducting a motivational interview might first ask about the patient's current level of activity and whether the patient has considered the potential benefits of increasing that level. If the patient indicates a desire to become more active but notes

time constraints, the nurse would then reflect that response back to the patient, followed by a motivating question. For example, the nurse might say, "If I understand you, you're saying you'd like to walk more, but you don't have the time. Can you think of any time during the day when you might be able to take a 20-to-30-minute walk?" Finally, the nurse helps the patient gauge the risks and benefits objectively: "Finding time for a 20-to-30-minute walk could significantly increase your overall health, improving your cholesterol and blood sugar profile. On a scale from one to 10, how important is that to you?" If the patient feels that a daily 20-to-30-minute walk is unrealistic, the nurse might suggest setting a goal of taking that walk every other day.

According to the *Physical Activity Guidelines for Americans* issued by the U.S. Department of Health and Human Services, adults should participate in at least 150 minutes (2.5 hours) of moderate-intensity physical activity weekly.[36] The target heart rate for moderate-intensity physical activity should be 50% to 70% of a person's maximum heart rate.[37] Respiratory exertion increases at this level—though not to the point that it should prevent conversation. Examples of moderate-intensity physical activity include walking at a brisk pace, biking at a leisurely pace, or ballroom dancing. Vigorous-intensity physical activity, on the other hand, usually makes it difficult to say more than a few words without pausing to catch your breath.[38] Examples include jogging, biking at more than 10 miles per hour, or aerobic dancing.

In addition to the many well-established health benefits of exercise—slower cognitive decline, reduced bone loss, enhanced sleep, and improved quality of life—following physical activity recommendations lowers risk factors for hypertension, glucose intolerance, insulin resistance, dyslipidemia, and inflammation.[39,40] While weight loss from exercise alone is generally minimal in adults,[41] a systematic review of exercise interventions found that, even in the absence of dietary changes, high-intensity exercise yielded greater weight loss than lower-intensity exercise.[42]

Most adults who are free of chronic disease, including those who are overweight or obese, can safely begin engaging in moderate-intensity physical activity without the need for extensive diagnostic evaluation. Those who plan to engage in vigorous exercise or have exercise-induced symptoms or known cardiac, pulmonary, or metabolic disease may require a medical screening examination with exercise testing.[43]

There are a number of standardized, validated questionnaires that prescreen and identify adults requiring further medical evaluation prior to initiating a physical activity program. The revised version of the Physical Activity Readiness Questionnaire (PAR-Q), now called the Physical Activity Readiness Questionnaire for Everyone (PAR-Q+), may be helpful in determining whether a person needs further testing prior to initiating a physical activity program. Developed by the British Columbia Ministry of Health and the Multidisciplinary Advisory Board on Exercise, and later adopted by the American College of Sports Medicine, the original PAR-Q consisted of seven questions. The new PAR-Q+ includes the same questions plus additional follow-up questions for those who answer "yes" to one or more of the initial seven. The follow-up questions, which focus on specific chronic medical conditions, may or may not indicate a need for further medical evaluation. About 1% of those screened are referred for additional screening, substantially fewer than the number of people referred when the original PAR-Q was used.[44] The questionnaire is free and can be taken online at http://bit.ly/1phHWzk.

Bariatric surgery. The 2004 Consensus Conference Statement from the American Society for Bariatric Surgery recommends that patients considered for bariatric surgery meet the following criteria[45]:

- severe obesity (a BMI of 40 kg/m^2 or more)
- obesity (a BMI between 35 and 39.9 kg/m^2) coupled with high-risk comorbidities, such as type 2 diabetes, life-threatening cardiopulmonary problems, obesity-related physical problems (such as joint diseases) that would be treatable if not for obesity, or obesity-related problems that interfere with walking, family function, or employment

There is some evidence that patients with a BMI below 35 kg/m^2 may benefit from bariatric surgery if they have a serious comorbid condition, such as type 2 diabetes, that could be cured or "markedly improved" with significant weight loss, though long-term risks have not been studied sufficiently.[45]

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The four main types of bariatric surgery are the Roux-en-Y gastric bypass, laparoscopic adjustable gastric banding, sleeve gastrectomy, and biliopancreatic diversion. After bariatric surgery, sustained weight loss of 14% to 25% of total body weight after 10 years and 13% to 27% after 15 years has been reported, as well as a lower overall risk of death and beneficial effects on such comorbid conditions as diabetes, cardiovascular disease, sleep apnea, and joint pain.[46] Major complications, including respiratory complications, embolism, and postoperative infection,

occur in 10% of cases. Long-term complications include abdominal pain, diarrhea, nutritional deficiencies, and strictures or leaks.

Pharmacologic interventions. The search for safe and effective pharmacologic agents for weight loss has been problematic. Because of a growing list of associated serious cardiovascular adverse effects, the U.S. Food and Drug Administration (FDA) withdrew both the combination fenfluramine–phentermine (known as fen-phen) and the drug sibutramine (Meridia) years after their initial approval as weight loss aids.[47-49]

Lorcaserin (Belviq) is, like fenfluramine, a serotonin receptor agonist, though it is thought to carry a lower risk of valvular heart disease than fenfluramine.[50, 51] The FDA reports, however, that 2.4% of adults in clinical trials developed valvular regurgitation while using the drug compared with 2% of those treated with placebo.[50]

A low-dose phentermine–topiramate combination product (Qsymia) has been on the market since July 2012 and has a good safety profile. Clinical trials found that when phentermine–topiramate plus lifestyle modification was used for just over a year, associated weight change ranged from –8.1 kg, or –17.9 lbs. (least-squares mean –7.8%; 95% CI, –8.5 to –7.1 kg, $P < 0.0001$), in patients assigned to phentermine 7.5 mg plus topiramate 46 mg, to –10.2 kg, or –22.5 lbs. (least-squares mean –9.8%; 95% CI, –10.4 to –9.3 kg, $P < 0.0001$), in patients assigned to phentermine 15 mg plus topiramate 92 mg.[52]

OBESITY IN CHILDREN: ASSESSMENT AND INTERVENTION

Health problems stemming from obesity can develop in childhood and persist in adulthood, manifesting as hypertension, hyperlipidemia, insulin resistance, elevated liver enzymes, and metabolic syndrome.[53] Obesity in childhood tends to continue into adulthood, with obese children as young as six having a high prevalence of adult obesity (nearly 80% 18 years later).[53] Families are an important source of information and influence for adults and children, but especially for the latter. When possible, obesity assessment of a child should include an evaluation of family behavior and attitudes about diet (particularly portion sizes, processed foods, fast foods, and sugary beverages), physical activity, television watching, and use of video games, all of which may contribute to childhood obesity.

Family behavior is rooted in the broader sociocultural community and is affected by socioeconomic status and environmental influences. It is not productive to blame parents for a child's weight problem; rather, nurses can empower parents to promote healthy eating and physical activity in their children by encouraging them to make the following lifestyle modifications[54]:

- Make high-calorie, fatty, or sugary foods less available in the home.
- Keep a large variety of fruits, vegetables, and other low-calorie snacks, such as air-popped popcorn, in the home.
- Limit eating to the kitchen or dining room.
- Use smaller dinnerware.
- Increase family physical activity.

Physical activity has been shown to significantly reduce body fat in obese children and to increase overall fitness.[55] Encourage parents of children ages five through 17 to provide time and space for them to engage in at least one hour of moderate-intensity physical activity per day and vigorous-intensity physical activity at least three days per week.[56] In addition, counsel parents to limit their children's outside-of-school screen time (TV and computer) to two hours or less per day.[57]

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Healthy children and adolescents usually do not require medical evaluation before starting a physical activity program. Children and adolescents who are obese or have medical conditions or disabilities may require an exercise specialist to assist in initiating a physically active lifestyle. The exercises in which children or adolescents can safely engage depends on their age, maturity, health status, skill level, and prior exercise experience.

If family-based behavioral changes fail to bring about necessary changes in a child's BMI, it may be necessary to refer the patient to a pediatric weight loss specialist for a more intensive approach. The American Academy of Pediatrics recommends that children ages 12 to 18 with a BMI in the 85th to 94th percentile strive for weight maintenance until, with growth in height, their BMI falls below the 85th percentile; for those whose BMI is above the 94th percentile, weight loss averaging no more than 2 lbs. per week is advised.[57]

It's been suggested that obesity prevention through healthy eating and increased physical activity may be

best implemented at the school or community level.[58] A Cochrane review of 64 studies that examined various interventions used to treat pediatric obesity found that combining behavioral and lifestyle (physical activity) interventions can "produce a significant and clinically meaningful reduction in overweight in children and adolescents."[58] A study that evaluated a 12-week lifestyle intervention program in 101 families with obese young children (ages four to 11) found that it significantly reduced children's BMI *z* scores (the number of standard deviations from the mean; for example, a BMI *z* score of 0 would put a child at the 50th percentile) as well as behaviors associated with weight gain.[59]

In fighting childhood obesity, the National Institute for Children's Health Quality (NICHQ; www.nichq.org) is a particularly useful resource. This nonprofit organization serves as a clearinghouse for successful child-oriented obesity initiatives and programs. The NICHQ promotes the slogan "5-2-1-0 Every Day," which stands for five or more fruits and vegetables, two or fewer hours of recreational screen time (computer and TV), one or more hours of physical activity, and zero sugary drinks—every day. Schools, cities, counties, and states have adopted this media message to encourage good health. The organization helps fund various obesity-prevention advocacy initiatives.

NURSES AS AGENTS OF CHANGE

Advocating for broad changes through public policy is key to reducing the obesity problem in the United States and in much of the Western world. Nurses, the largest group of health care professionals in the country, can be the catalyst that inspires colleagues, families, neighbors, and the broader community to take on the initiatives that will reverse the worldwide obesogenic trend through their research and consistent promotion of healthy weight management strategies. ▼

For 32 additional continuing nursing education activities on obesity-related topics, go to www.nursingcenter.com/ce.

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