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## Obesity: A Persistent Global Health Problem

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### Abstract

Despite extensive public attention given to diet and exercise as effective countermeasures to obesity and obesity-related problems, there has been no significant reduction in obesity rates in the United States and throughout the world. The author provides a brief update on obesity, dietary and physical activity guidelines, potential contributing factors to behavioral change and the role that nurses have in advancing health promoting activities that can reduce the health risks associated with obesity.

### Prevalence

Within the last decade, the obesity epidemic along with its related risks of preventable chronic diseases has received extensive public attention, yet far too many continue to ignore the warnings. Although obesity is strongly associated with cardiovascular disease, diabetes, certain cancers, reduced quality of life, and premature death, there has been no significant reduction in the obesity rates in the United States and throughout the world [1,2]. Data from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee 2015 update, show that approximately 33.9% of U.S. adults  $\geq$  age 20 years are overweight, 35.1% are obese, and 6.4% are extremely obese [3]. Simply stated, an estimated 160 million adults are either overweight or obese and are considered high risk for multiple negative health outcomes [4]. Additionally, the direct and indirect medical costs for obese adults are substantial, potentially amounting to as much as \$147 billion annually [5]. Equally alarming as the rise in obesity among adults and its associated costs is the increased occurrence of obesity and corresponding rise in dyslipidemia, hypertension, metabolic syndrome, and type 2 diabetes among children [6]. Although the prevalence of obesity among children and adolescents is relatively stable at 17%, approximately 12.7 million are affected [7]. Obesity is no longer considered just an American problem. According to the World Health Organization 2015 update, 1.9 billion adults worldwide are considered overweight and > 600 million are deemed obese;<sup>4</sup> and, an estimated 13% or 42 million children < age 5 years are either overweight or obese [8].

### Definition and Diagnosis of Obesity

In 2014, a panel of endocrinology experts recognized obesity as a chronic disease characterized by metabolic disturbances and inflammatory processes influenced by a complex interaction between biological, environmental, and behavior factors that result in

increased adipose tissue mass and heightened risk of morbidity and mortality [9]. While the terms overweight and obesity are not mutually exclusive in that obese persons are also overweight, redefining obesity as a chronic disease provides a framework for staging ranges of weight, identifying the presence of weight-related complications, and implementing appropriate treatments [9]. Widely accepted as the international standard, BMI (body mass index) as determined by a person's weight in kilograms divided by the square of his height is judged to be a practical and reliable approach for assessing body fat in any healthcare setting [9]. An adult with a BMI between 25 and 29.9 is regarded as overweight, whereas, an adult with a BMI  $\geq$  30 is considered obese [9]. Central adiposity is an independent risk factor for cardiovascular disease, however, taking a waist measurement for those with a BMI  $\geq$  35 and already considered high-risk adds little value and is unnecessary [10].

Childhood obesity is measured by BMI percentiles. Childhood overweight is classified as having a BMI  $\geq$  the 85<sup>th</sup> percentile and lower than the 95<sup>th</sup> percentile, whereas, childhood obesity is defined as having a BMI  $\geq$  95<sup>th</sup> percentile for children of the same age and sex [10].

### Diet and Physical Activity

Poor diet and physical inactivity are major and modifiable factors contributing to overweight and obesity affecting adults, adolescents, and children in all sectors of our society. Achieving and maintaining a balance between the intake of calories from foods and beverages and calories used through physical activity is essential for one's health and well-being. While people cannot control calories expended in normal internal metabolic processes at the cellular, tissue, and organ levels, they can regulate or adjust the volume, frequency, and type of foods they eat, as well as the amount and intensity of their daily physical activity. However, in today's society balancing calories consumed with calories expended may be particularly difficult for some when considering our environment is not only replete with food, larger portion sizes, readily available fast foods restaurants, and fad diets, but discourages physical activity and calorie expenditure.

### Food consumption

In a prospective cohort study, Pereira and colleagues (2005) followed 3,031 adults between the ages of 18 to 30 years for 15 years to examine the relationship between fast food habits, changes in body weight, and the development of insulin resistance. Results suggest a positive relationship exists between visits to fast food

restaurants, weight gain, and insulin resistance [11]. Similarly, data from > 500,000 individual-level student responses to the 2002-2005 California Healthy Kids Survey (CHKS) found that students with fast food restaurants within one half mile of their school consumed fewer fruits and vegetables, drank more carbonated beverages, and were more likely to be overweight compared to their counterparts who were not near fast food restaurants [12]. However, when Currie and colleagues examined the effect of the consequences of proximity of fast food restaurants on obesity and weight gain among 3 million children and 3 million pregnant women, they discovered that schools within one tenth mile of a fast food restaurant could account for only 0.5% for increased obesity over 30 years among ninth graders and a 1.6% in the probability of weight gain over a 10 year span among pregnant women residing within one half mile of fast food restaurants. They concluded that there was no significant correlation between proximity of fast food restaurants and weight gain among children and pregnant women [13]. Judging from the differing results of these studies, the degree to which eating at fast food restaurants influences weight gain remains unclear. Nevertheless, their importance is not negated in that determining individual eating habits within the context of environment as an essential component in the prevention and management of obesity cannot be ignored.

Over the past fifty years there has been a rise in commercial diets. Data from a qualitative study using open-ended interviews with 76 obese adults ages 16-72 years show that participants frequently turn to commercial diets in their weight loss attempts with the most popular being Weight Watchers, Jenny Craig, slimming milk shakes, and periods of starvation [14]. However, an overview of calorie-restricting diets on the long-term management of obesity show that while fad diets may lead to short-term weight loss, averaging 5-10% of body weight, these losses are not generally maintained and the evidence supporting their improvement in one's overall health is lacking [14]. Healthy eating is not about dieting or limiting the intake of certain foods, rather it is about learning to make lifestyle changes that balances calories consumed through foods and beverages with calories expended through physical activity.

## Healthy eating

While diverse, healthy eating patterns across the globe share common components: limiting caloric intake to the amount needed to attain or maintain a healthy weight; consuming a variety of foods in nutrient-dense forms; limiting intake of solid fats, that is, saturated and trans fatty acids; replace solid fats with polyunsaturated and monosaturated fatty acids when possible; reducing intake of added sugars, sodium, and refined grains; increasing intake of vegetables, fruits, whole grains, milk and milk products; replacing some meat or poultry with seafood; and, limiting alcohol intake to moderate levels [15].

Losing 1 to 2 pounds per week with a goal of 5 to 10% of weight loss over 6 months is realistic, safe, and more likely to be sustained in the long term. For adults, this can be accomplished by reducing caloric intake by 500 to 1000 calories per day. A daily caloric intake between 1,000 to 1,200 is usually considered safe for women weighing < 165 pounds, whereas a daily calorie intake between 1,200 to 1,600 is safe for women weighing ≥ 165 pounds or exercise regularly. In general, men require 1,200 to 1,600 calories daily to safely lose weight [16]. While children also need to balanced energy intake-output, their growth should be taken into account [16].

## Energy expenditure

Physical activity is the other side of creating and maintaining an energy balance. Analysis of data from 1988 to 2010 on obesity, abdominal obesity, physical activity, and caloric intake in US adult suggests that physical inactivity and not caloric intake may account for the rise in obesity for both men and women [17]. Broadly accepted by the scientific community, regular moderately intense body movement produced by skeletal muscles that require an energy expenditure above resting can lower body weight with a higher proportion from fat; improve mood and cognitive functions; increase

perceived energy; strengthen bones, muscles, and heart; improve lung function; and, lower cardiovascular risks [18]. Despite the numerous health benefits from intentional physical activity, research shows that few engage in regular intentional physical activity and many are primarily sedentary. Analysis from a survey of 80,000 respondents between 2003 and 2008 have shown that only 5.07% report engaging in any vigorous exercise-related physical activity [18]. According to the Centers for Disease and Prevention (2013), obese persons and persons > 65 years are less likely than others to engage in adequate physical exercise [19].

Long-term adherence is essential to achieve maximum benefits from physical activity. However, high dropout rates among those who attempt to engage in regular exercise raises a concern. A meta-analysis of 36 studies examining dropout and compliance in exercise interventions targeting bone mineral density among 3,297 adults assigned either to an experimental or control group found that the dropout rates for both groups averaged 20.9% [20]. Other studies suggest that the dropout rate may be as high as 50 percent within a 6 month period [20].

## Identifying barriers to physical activity

Regrettably for many obese persons, any consistent change that includes increasing physical activity is hampered by a number of environmental events, as well as cognitive, affective, and biological processes that reinforce inactivity. The advancements in technology, reduction in manual labor, lack of affordable physical activity facilities, inclement weather conditions, the inconvenience of exercise, competing demands, and time constraints are powerful environmental and behavioral factors that foster insufficient physical activity and make the incorporation of any regular physical activity difficult [21].

Additionally, commonly expressed psychological and physical restraints may create obstacles to exercise. These include feeling too overweight to exercise, uncomfortable negative emotions towards exercise, physical discomfort, tiredness, multiple failed attempts, and low social support [22].

## Physical activity recommendations

Physical activity is considered a primary treatment objective for obese persons with a recommended target goal of ≥ 5 to 10% initial body weight [23].

Children ≥ ages 6 years and adolescents should engage in ≥ 60 minutes of moderate to vigorous physical activity daily with added muscle strengthening activities ≥ 3 days a week [24]. Although there are no quantitative recommendations for children under age 5, they should be encouraged to play several times each day.

Health benefits for adults can be achieved from as little as 60 minutes of moderate intensity physical activity per week. To attain the best results requires engaging in ≥ 150 minutes of moderate intensity aerobic activity or 75 minutes of vigorous aerobic intensity each week, however, for those who are inactive, beginning with some activity and gradually increasing frequency and intensity is more likely to improve adherence [24].

## Conclusion

Despite ongoing efforts to increase awareness on the importance of diet and regular intentional physical activity as effective countermeasures to obesity and obesity-related problems, obesity remains a persistent global challenge.

Health and wellness are the cornerstones to nursing. As integral contributors to healthcare, nurses at all levels have an ideal opportunity to advance health promoting activities that can reduce the risk of obesity and obesity-related problems. Given the enormity of the negative consequences associated with obesity, it is important for nurses to initiate evidenced based strategies that encourage lifestyle changes that include balancing healthy eating and physical activity. While increasing awareness is salient, nurses must take into account

that human behavior is a complex and multifaceted experience which will require them to go beyond the provision of information as a primary means of changing enduring unhealthy behavioral patterns. Eliciting, clarifying, resolving ambivalence to perceived benefits and barriers, and establishing reasonable goals can encourage, empower, and motivate obese people in making healthy lifestyle choices.

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