

Research Article

## Obesity, Weight Management and Diagnosis in Women

Nourhan Mohamed Metwally<sup>1\*</sup>, Mai Hassan Seif<sup>2</sup>

<sup>1</sup>Family Medicine Specialist in Phcc in Qatar

<sup>2</sup>Primary healthcare corporation in Qatar

**\*Corresponding author:** Nourhan Mohamed Metwally, Family Medicine Specialist in Phcc in Qatar, Qatar.

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### Abstract

In the United States and around the globe, obesity is a primary cause of disease and death. Obesity is a chronic disease that is commonly seen in clinical practice today, and it necessitates a variety of medical treatments. Obesity affects both males and females of all ages, but there are some factors that are particularly relevant to women's health. Obesity is more common among women in the U.S. than it is amongst men. To lower the incidence of obesity, effective interventions are required. The success of contemporary weight loss strategies, however, varies. This article provides practical advice on how to manage your lifestyle. These approaches can assist females in setting more realistic weight loss goals, adapting to patient-specific lifestyle counselling, and implementing ways to improve compliance for long-term weight loss.

**Keywords:** obesity; weight management; women

### 1. Introduction

Obesity is a multifaceted, persistent, relapsing pandemic described as the aberrant or inadequate fat accumulation in the body. It is caused by genetic, biochemical, microbiological, and environmental variables that support a positive energy balance, mostly related with greater intake and decreased consumption [1-3]. Obesity is the result of a slew of multisystem illnesses, notably type 2 diabetes, [4] cardiovascular disease, [5] tumors, [6] and so on. It raises death rates, and contributes to a significant rise in health spending [7, 8].

Obesity and overweight are growing epidemics in many nations, and these are posing a serious public health issue [9]. Several studies describing the epidemiology of obesity represent that obesity rates

are rising in both females and males of all ages, regardless of their race, ethnicity, geographic location, or socioeconomic level [10, 11]. According to the "United States National Health and Nutrition Examination Survey," the total prevalence of obesity among adults was reported to be 37.7% in 2013–2014. Considering the sex factor, women had a comparatively higher prevalence rate of 40.4 percent, while men relatively had a lesser prevalence rate of 35.0 percent [12].

In the U.S., obesity has been expanded to an epidemic state. It is now a primary cause of morbidity and mortality among the U.S. population. "Body mass index (BMI)," "waist-to-hip ratio (WHR)," "waist size," and "% body fat" are some of the ways through which obesity can be measured and then classified as well. The BMI, "which is a surrogate marker for a person's body fat composition," is the most often used measure of obesity. It is calculated by multiplying an individual's weight in kg by their height in meters. Normal weight is defined as a "BMI of 18.5 to 24.9. A BMI of 25 to 29.9 is considered overweight, and a BMI of 30 or more is considered obese" [13].

An increase in body mass index (BMI) has been closely related to the worldwide risk burden of "Noncommunicable chronic diseases" from some recent past [14, 15]. Furthermore, many studies have reported that women with a high BMI face a higher risk of many other diseases like infertility risk, musculoskeletal disorders, breast cancer, type 2 diabetes, atherosclerotic cardiovascular disease, dyslipidemia, endocrine disorders, hypertension, and pulmonary function impairment [16-24]. The "world health organization (WHO)" has made the

overarching goal of preventing overweight and obesity in women a top priority for nations with the aim to prevent premature death that can result from various chronic diseases.

The prevalence of class 3 obesity, which is defined as a "BMI of 40 or more", is likewise much higher in women than in men, with a percentage at 9.9% in women against 5.5% in men. Even when smoking status, race, ethnicity, age, and education were taken into account, the incidence of total obesity and class 3 obesity in women grew in a linear fashion for the year 2005 to 2014. In 2009, almost 76 percent of individuals seeking care in government-financed health clinics were determined to be overweight or obese (with a BMI of 25 kg/m<sup>2</sup>) [25]. Women are more likely than males to be obese in this community. Women are also more likely to be referred to a nutritionist or given weight-loss prescriptions. Based on statistics from the "Pregnancy Risk Assessment Monitoring System" in 20 U.S. states, "the prevalence of obesity in the prepregnant population appears to have increased consistently by an average of 0.5 percentage points every year from 2003 to 2009 in women across most age groups and racial/ethnic backgrounds" [26].

Obesity in procreative women contributes to the "intergenerational transmission of obesity" from mother to kid. Studies have shown that obesity is strongly linked to one's genetic makeup. Stunkard and colleagues conducted a groundbreaking study that followed 540 adult Danish adoptees. It was discovered that the "BMI of the adoptees and the BMI of their adoptive parents had no correlation. However, The BMI of their biological parents, on the other hand, had a high association" [27]. Stunkard et

al. also discovered that the "concordance rate for increased weight was double that of in monozygotic twins as it was in dizygotic twins" in another study with 1,974 monozygotic and 2,097 dizygotic twins.

## 2. Evolution of Weight and Obesity Management; Past to Present!

Although the current obesity crisis is a comparatively recent condition, relics such as the Venus of Willendorf and the Venus of Hohle Fels show that obesity prevailed millions of years ago [28, 29]. Obesity existed and had cultural relevance as far back as 30,000 years ago, as evidenced by small obese female statuettes from the Stone Age. Obesity was existed throughout history, according to records dating from the "Ancient Egyptian and Biblical eras to the Greco-Roman and Medieval periods," albeit individuals in previous centuries might see overweight and obesity as extraordinary rather than normal. Numerous statuettes depicting obesity have been discovered in the Neolithic period, most notably the 'Mother Goddess' objects discovered in Anatolia (now Turkey) and Malta [30, 31]. Numerous royal mummies from Egyptian Civilization, including "King Ramses III and Queen Inhapy" 4, had their skin folds restored, indicating that they were obese. Obesity, in contrast to now, was more likely to be unusual than common centuries ago.

When the first anti-obesity guidelines on nutrition, fitness, lifestyle, including the use of "emetics and cathartics," were developed, the "Greek physician Hippocrates (460–377 BCE)" identified the health hazards of obesity. These guidelines remained virtually constant until the early twentieth century, when growing urbanization, sedentary work, and the increased availability of processed meals resulted in a

dramatic rise in obesity. This necessitated the development of new, more effective methods for losing weight, addressing obesity-related comorbidities, and achieving the prevailing cultural ideal of thinness [32].

## 3. Obesity and Weight Management in Women

While there is no doubt that obesity has a major genetic component, there is no clarity on which theory or hypothesis actually describes obesity, owing to the lack of simple "Mendelian inheritance in common polygenic obesity" [33].

The "American Heart Association (AHA), the "American College of Cardiology (ACC)," and "The Obesity Society (TOS)" have developed evidence-based suggestions for obesity and overweight screening and therapy. According to the recommendations of these three, people with a BMI of less than 30 kg/m<sup>2</sup> and those people with an excess BMI of 25 to 29.9 kg/m<sup>2</sup> should seek weight-loss treatment. These are those who have a marker for higher cardiovascular risk, such as HTN, T2D, or a high W.C. The foundation of their suggestions is the continual screening of patient BMI and weight gain comorbidities by primary care clinicians in order to identify individuals who need weight-loss management [34]. Collecting details on weight and lifestyle records to establish contributing factors, such as previous weight-loss efforts, activity level, dietary patterns, family background of the obese individual, and health conditions and prescription drugs that can affect weight, would be part of a comprehensive workup to help lead treatment.

The first stage for patients who demonstrate a willingness to change their lifestyle is to set weight-loss objectives. An initial weight loss objective of 5% to 10% of baseline weight in 6 months has been advised by the AHA/ACC/TOS Expert Panel. According to the "Clinical Practice Guidelines" by the "American Association of Clinical Endocrinologists (AACE)" and the American College of Endocrinology (ACE)," patients must first be provided a comprehensive lifestyle therapy [35].

Both quantity and quality of diet, as well as physical activity, play a part in the onset of overweight and obesity. Lindberg et al. concluded that a balance of fat and sugar additives in the diet is the strongest predictor of increased BMI, using data from the U.S. Department of Agriculture. This explains 96 percent of the variation in women's BMI. Fats and sweeteners, on the other hand, were found to have a direct effect on BMI [36]. This emphasizes the role of certain foods in increasing the likelihood of binge eating and obesity. Fats and sweeteners, on the other hand, were proven to have a significant effect on BMI. This emphasizes the role of certain foods in raising the likelihood of binge eating and obesity. The "2008 Physical Exercise Guidelines" for the general public from the "U.S. Department of Health and Human Services (HHS)" prescribe 150 minutes of "moderate-to-vigorous activity (MVPA)" every week (21 minutes per day) for avoiding weight gain and obesity [37].

Maher et al. studied the connection between obesity and time spent in MVPA activities using NHANES data on the accelerometer-recorded frequency of different physical exercises such as walking and jogging. Those who exceeded a 2,020 repetition per

minute motion-induced acceleration threshold [38]. They discovered a significantly elevated risk of developing diabetes in women with relatively low and moderate MVPA compared to high MVPA percentile by dividing MVPA times into tertiles. They also stated that 20 minutes of MVPA each day might be beneficial in preventing obesity. These observations, however, mostly apply to people who are normal weight but have always maintained normal body weight.

The "National Weight Control Registry (NWCR)" used a cohort of more than 10,000 people in their research. Eighty percent of them were women who had dropped at least 13.6 kilograms (30 pounds) and maintained it off for at least a year. The findings of this study offer a different image for people who are trying to lose weight. NWCR individuals showed an overall weekly rate of workouts of 60–75 minutes per day (5–6.5 kcal/min) of "moderate-intensity activity" like brisk walking [39]. The data revealed that daily strenuous activity, such as jogging, should be 35–45 minutes (8–10 kcal/min). 53 As a result, HHS has issued a supplemental recommendation for persons aiming to reduce weight or sustain weight loss of 60–90 minutes of MVPA each day [40].

"Physicians can provide an office physical activity assessment as well as a prescription and referral for physical exercise," according to the "American Medical Association and the American College of Sports Medicine's" "Exercise is Medicine" program. In order to guarantee an appropriate dose of activity to promote health and weight outcomes, a successful exercise prescription must define the frequency, intensity, type of exercise, duration necessary, and periodic progress regimen for the patient [41]. It

should also consider pre-existing levels of activity and the presence of concomitant medical disorders such as cardiovascular disease (CVD), renal disease, and metabolic diseases (such as diabetes).

Before starting a planned exercise regimen, you need to get medical clearance [42]. There have been various studies that have sought to define the "number of days per week of moderate-to-vigorous exercise" and the "average amount of minutes per day of exercise" at that level. Individuals in the NWCR cohort showed an overall weekly degree of personal physical activity of 60–75 minutes of moderate-intensity exercise or 35–45 minutes of intense exercise. It's worth noting, nevertheless, that perhaps the "standard deviation of NWCR members' average weekly kilocalories of physical activity" was fairly large. As a result, there appears to be a significant range in weekly kilocalories of physical exercise [43].

Regarding the possibility for partiality in self-reported records on physical activity, Phelan et al. utilized accelerometry to have an objective assessment of the value and intensity of exercise performed by people who had managed to lose and maintained weight, as well as those who always seemed to have a normal BMI with healthy body weight [44, 45]. The weight-loss-maintainer team spent considerably more minutes per day in physical exercise (58.6 vs. 52.1;  $p = 0.0001$ ) than the always normal-weight group." There were (24.4 vs. 16.9;  $p = 0.02$ ) extra minutes engaged in higher intensity exercises. The majority of people in the "always-normal-weight group" did 30–60 minutes of exercise each day. The "weight-loss-maintainer group" had a higher percentage of people who exercised for more

than 60 minutes each day ( $p = 0.002$ ). As a result, it's critical to inform patients that significant weight loss necessitates levels of physical activity far above the minimum advised for the general population. Physical activity, even if it does not result in weight loss, is nevertheless advantageous in people who are overweight or obese and at risk for CVDs [45]. Eiben et al., 16 found that use of telephone and e-mail intervention involving limited face-to-face engagement resulted in considerably more weight loss after one year than a wait-list control group ("1.9 kg vs. 2.6 kg;  $P0.041$ ") [46]. Face-to-face group sessions for ten weeks led to considerably larger weight loss than the control group ("1.9 kg vs. 0.2 kg;  $P0.03$ "), but not when compared to all those participants who got the intervention through mail communication, according to Klem et al., (1.1 kg). Furthermore, six months after the intervention, the big variations did not persist [47].

Following eight months, a 10-week behavioral "weight gain prevention program" administered through DVD and telephone generated the same weight changes as a "usual care control group." In two trials, Levitsky et al. found that a simple intervention in which young women measured themselves regularly for ten weeks and were given feedback on energy requirements for weight management succeeded in weight stability when compared to control group participants who gained weight ("in the first study, 0.1 kg vs. 3.1 kg and in the second study, 0.8 kg vs. 2.0 kg;  $P0.01$ ") [48]. Young women who completed a 15-week "high-intensity intermittent exercise program" reduced weight, while the control group gained some weight (1.5 kg vs. 1.4 kg;  $P0.01$ ). Young people who take part in the steady-state exercise program, on the other

hand, maintained their weight (0.1 kg). Women randomized to a 4-month duration "nutrition science college course" had no substantial differences in weight gain or loss after the intervention or one year after the intervention when compared to the participants of the control group. Similarly, there was no significant weight difference between women who were randomly assigned to a "4-week low-energy-density diet" or a "4-week high-energy-density diet" [49, 50].

#### 4. Conclusion

Obesity is a complicated condition that necessitates a methodical approach to determining the cause and treatment choices for each patient. Obesity management is critical not only because of the substantial health concerns for people, but also because of its rising prevalence internationally and across different age groups.

Individuals especially women may lose weight through weight loss programmes that incorporate practical weight loss targets, frequent check-ins, and meal/activity diaries. Establishing realistic and clear weight-loss goals can be tough; however, visual materials that demonstrate the health and wellness benefits of losing weight can be useful in setting realistic objectives and motivating the patient to keep the weight off. The recommendation for a low-calorie diet combined with increased physical activity may appear straightforward, but the key to success is adherence to and sustainability of this counsel. Patient-specific diet and activity regimens, as well as changes in eating and activity behaviour, can help improve compliance. To accomplish long-term weight loss, barriers in the patient's surrounding must also be tackled.

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