Acta Scientific NUTRITIONAL HEALTH (ISSN:2582-1423)

Volume 6 Issue 11 November 2022

Mini Review

A Review of Obesity Management

Viola Hoxha[1]* and Kara Mayes[2]

[1]*Mercy Family Medicine Residency, USA*

[2]*Medical Director, Mercy Clinic Weight and Wellness, USA*

***Corresponding Author:** Viola Hoxha, Mercy Family Medicine Residency, USA.

DOI: 10.31080/ASNH.2022.06.1136

Received: September 09, 2022

Published: October 06, 2022

The World Health Organization (WHO) has reported that obesity has been growing at an alarming rate worldwide [1,2]. It has tripled between 1975 and 2016. In 2016 WHO reported that more than 1.9 billion adults had overweight, and 650 million of those had obesity. Obesity is diagnosed by calculating the body mass index (BMI, kg/m^2), weight in kilogram divided by the height in meters squared. BMI greater or equal to 30 is considered obesity, meanwhile BMI at 25.0-29.9 kg/m^2 is considered overweight.

BMI greater than 25% and obesity are prominent risk factors for development of numerous conditions and diseases such as cardiovascular disease, type 2 diabetes mellitus, hyperlipidemia, obstructive sleep apnea, metabolic associated fatty liver disease, metabolic syndrome, chronic kidney disease, depression, and osteoarthritis [2-5]. Consequently, BMI greater than 25% and obesity affect the healthcare system and have an enormous impact on healthcare costs.

The etiology of obesity is complex and includes genetic, environmental, physiologic, psychological, lifestyle, social, and economic factors (Table 1) [2,6,7].

Having obesity is not just having high weight; it mostly means being "overfat". Body composition includes body fluids, bone, fat, and muscle tissue. Fat distribution in the body has been found to be more important than weight alone for health promotion and disease prevention [8]. An increased intra-abdominal visceral fat even in the absence of a high body mass index or obesity can increase mortality and morbidity.

Weight management targets should be realistic and individualized according to patient's ability and risk factors. The goals of

Individual risk factors	
Genetic predisposition	Monogenic single gene mutation: deficiency of melanocortin-4 receptor (MC4R), leptin, or proopiomelanocortin (POMC). Polygenic obesity: contribution of many genes. Syndromic obesity: Prader-Willi syndrome
Epigenetic modifications	DNA methylation: metabolic status of mother can influence DNA methylation of leptin at birth causing obesity. Adiponectin epigenetic status related to obesity
Prenatal	Maternal obesity, high weight gain during gestation, gestational diabetes
Neonatal	Prematurity
Post-natal	Formula-fed versus breast-feeding, infant overfeeding
Family history	Parental obesity: increase risk in offspring by 3-fold if one parent has obesity and 10-fold increase if two parents have obesity
Excessive energy intake	High calorie diet rich in processed fat and carbohydrates
Physical inactivity	Sedentary lifestyle: prolonged screen time, sitting at home or work
Sleep deprivation associated with obesity	Due to imbalance of hormones, impaired glucose tolerance, increased nocturnal cortisol
Psychological	Depression, anxiety, stress
Drug-induced	Steroids, insulin, antidepressants (amitriptyline), antipsychotics (clozapine, quetiapine)
Environmental risk factors	
Obesogenic environment	Easily accessible fast food, high-calorie diets, affordability of food
Built environment	Few sidewalks/green spaces, low access to recreational resources

Transport/ technology	Utilization of cars for transport, fewer manual jobs
Socioeconomic risk factors	
Demographic	Age, ethnicity (black, Hispanic), menopause
Socioeconomic	Low income and educational level

Table 1

treatment include lowering the risk of cardiovascular and other chronic diseases, lowering early mortality risk, preventing work disability and early retirement, and improving quality of life. Based on current guidelines a weight loss of 5-10% from baseline weight is considered clinically significant and improves cardiovascular risk factors [2,9].

Obesity management consists of two broad components. First is the behavioral approach which includes various lifestyle modifications such as healthy diet, increased exercise, and other behavioral modifications [2,10,13]. Second component is pharmacotherapy or surgical/procedural interventions when indicated. Anti-obesity medications may be applied as single or combination therapy. Lifestyle modification and weight management programs requires a holistic approach and should involve multidisciplinary team including physician, dietitian, psychologist, exercise physiologist, and other health care professionals [2,12,13].

Different dietary approaches can be utilized to achieve weight loss. Ideally, patients should receive personalized nutrition plans to achieve sustainable healthy weight. Various nutrition strategies have shown to achieve weight loss. Most diets have near equivalent short and long-term safety and variable efficacy, so the selection can be driven by required control of comorbidities or by patient preference. Low carbohydrate diet means restriction of carbohydrates to 20-120g per day. Weight loss with low carbohydrate diet may be 11% at one year and 7% at 2 years [2,15-17]. Low fat diet includes 10-30% total caloric intake from fat [15,16]. High protein diet includes a 25% of total caloric intake from protein and 30% and 45% of remained calorie are form fat and carbohydrate respectively. This diet provides foods that achieve energy deficit [19,20]. Mediterranean diet typically has 35-40% fat, is rich in omega-3, whole grains, fruits, vegetables, legumes, nuts, and fish [2,15].

Low calorie diets consist of an energy deficit of 500-800 kcal/day. Women are generally prescribed 1200-1500 kcal/day and men 1500 - 1800 kcal/day [2,21]. Meal replacement diets consist mostly of liquid protein formula or bars to replace all meals or a significant portion of daily meals [2,11].

Exercise recommendations should include aerobic exercise which is important during weight loss phase, and resistance exercise which increases muscle mass and is considered important for weight maintenance. Behavioral modifications can include self-monitoring like tracking weight, recording food, and counting exercise time; goal-setting such as weight goal, calorie intake and exercise regimen; and stimulus control with keeping tempting foods out of sight [2-4]. An important part of success during weight management process are the cognitive skills such as problem-solving including tactics to deal with weight-related health behaviors (social eating), and cognitive restructuring with identifying and modifying maladaptive thoughts contributing to overeating and physical inactivity. Relapse prevention can consist of learning to get back on track, maintaining long term motivation, and stress management [9-12].

It is shown that pharmacotherapy helps with managing appetite and portion control and improves the adherence to lifestyle modifications. Pharmacotherapy is indicated for BMI greater than 30 or BMI greater than 27 with obesity-associated comorbidities [15]. Medications for weight loss are prescribed together with comprehensive diet, physical activity, and behavioral therapy to achieve adequate weight loss and should result in clinically significant weight loss. Anti-obesity medications are prescribed according to their efficacy and safety, the type of obesity and associated comorbidities. Currently approved anti-obesity medications are single medications such as phentermine, orlistat, GLP-1 agonist (liraglutide and semaglutide); and combined medications phentermine/topiramate and naltrexone/bupropion.

Bibliography

1. WHO: Obesity and overweight.

2. Elhag., *et al*. "Medical Weight Management: A Multidisciplinary Approach". In Weight Management - Challenges and Opportunities, edited by Hassan Heshmati. London: *IntechOpen* (2022).

3. Upasana. "Weight Management: Inflammation". In Weight Management, edited by Hubertus Himmerich. London: *IntechOpen* (2020).

4. Shaw., *et al*. "Resistance Training and Weight Management: Rationale and Efficacy". In Weight Management - Challenges and Opportunities, edited by Hassan Heshmati. London: *IntechOpen* (2022).

5. Swinburn BA., *et al*. "The global obesity pandemic: Shaped by global drivers and local environments". *The Lancet London England* 378 (2011): 804-814.

6. Lin X and Li H. "Obesity: Epidemiology. Pathophysiology, and Therapeutics". *Frontiers in Endocrinology* 12 (2021): 706978.

7. Duffey KJ., *et al*. "Differential association of the fast food and restaurant food consumption with 3-y change in body mass index: The Coronary Artery Risk Development in Young Adults Study". *The American Journal of Clinical Nutrition* 85 (2007): 201-208.

8. Spano M. "Nutrition strategies for maximizing performance". In Haff GG, Triplett NT, editors. Essential of Strength Training and Conditioning. 4th edition. Champaign, Illinois: Human Kinetics (2015).

9. Garvey WT., *et al*. "American association of clinical endocrinologists and American college of endocrinology comprehensive clinical practice guidelines for medica care of patients with obesity". *Endocrine Practice* Official journal of American Coll Endocrinol the American Association of Clinical Endocrinologists 22.3 (2016): 1-203.

10. Grant P., *et al*. "The bariatric physician". *Clinical Medicine (London, England)* 14 (2014): 30-33.

11. Forgione N., *et al*. "Managing obesity in primary care: Breaking down the barriers". *Advances in Therapy* 35 (2018): 191-198.

12. Gudzune KA., *et al*. "Efficacy of commercial weight loss programs: An update systematic review". *Annals of Internal Medicine* 162 (2015): 501-512.

13. Willaing I., *et al*. "Nutritional counselling in primary health care: A randomized comparison of an intervention by general practitioner or dietitian". *European Journal of Cardiovascular Prevention and Rehabilitation* 11 (2004): 513-520.

14. Telles S., *et al*. "Lifestyle modification in the prevention and management of obesity". *Journal of Obesity* (2016): 5818601.

15. Shai I., *et al*. "Weight loss with a low-carbohydrate, Mediterranean, or low fat diet". *The New England Journal of Medicine* 356 (2008): 229-241.

16. Brehm BJ., *et al*. "A randomized trial comparing a very low carbohydrate diet and calorie-restricted low-fat diet on body weight and cardiovascular risk factors in health women". *The Journal of Clinical Endocrinology and Metabolism* 88 (2003): 1617-1623.

17. Foster GD., *et al*. "Weight and metabolic outcomes after 2 years on low carbohydrate versus low fat diet". *Annals of Internal Medicine* 153 (2010): 147-157.

18. Schwingshack L and Hoffmann G. "Comparison of effects of long-term low-fat vs high fat diets on blood lipid levels in overweight or obese patients: A systemic review and meta-analysis". *Journal of the Academy of Nutrition and Diabetics* 113 (2013): 1640-1661.

19. Sacks FM., *et al*. "Comparison of weight loss diets with different compositions of fat, protein, and carbohydrates". *The New England Journal of Medicine* 360 (2009): 859-873.

20. Dalle Grave R., *et al*. "A: randomized trial of energy restricted high protein versus high carbohydrate, low fat diet in morbid obesity". *Obesity* 21 (2013): 1774-1781.

21. Zubrzycki A., *et al*. "The role of low-calorie diets and intermittent fasting in the treatment of obesity and type-2 diabetes". *Journal of Physiology and Pharmacology* (2018): 69.