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OBESITY- ITS CAUSES, RISKS AND REMEDIES

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Obesity has become a global problem and has emerged as the most important contributor to ill health, displacing under nutrition and lifestyle diseases. Not only is obesity prevalent in Europe and the America but it also is on the rise in Asian countries. WHO now recognises obesity as a major public health problem. By early adulthood, about the same number of men want to lose or gain weight, whereas almost all women want to lose weight. As we age, we become more concerned with our weight as it relates to health. At its simplest, obesity results from a chronic positive energy balance, as energy intake regularly exceeds energy expenditure, and weight is gained. The reality is that obesity is a complex disorder that probably involves several regulatory mechanisms and the way they interact and respond to biological factors, such as heredity, age and sex, social and environment factors, and behaviour and above all lifestyle choices.

CAUSES OF OBESITY & OVER WEIGHT

A number of factors can play a role in weight gain. These include diet, lack of exercise, factors in a person's environment, and genetics. Some of these factors are discussed briefly below.

- ***Food and Activity***

People gain weight when they eat more calories than they burn through activity. This imbalance is the greatest contributor to weight gain.

- ***Environment***

The world around us influences our ability to maintain a healthy weight. For example:

1. Not having area parks, sidewalks, and affordable gyms makes it hard for people to be physically active.
2. Oversized food portions increase Americans' calorie intake, making even more physical activity necessary to maintain a healthy weight.
3. Some people don't have access to supermarkets that sell affordable healthy foods, such as fresh fruits and vegetables.
4. Food advertising encourages people to buy unhealthy foods, such as high-fat snacks and sugary drinks.

- ***Genetics***

Research shows that genetics plays a role in obesity. Genes also may contribute to a person's susceptibility to weight gain. Scientists believe that genes may increase a

person's likelihood of becoming obese but that outside factors, such as an abundant food supply or little physical activity, also may be required for a person to put on excess weight.[2]

- ***Health Conditions and Medications***

Some hormone problems may cause overweight and obesity, such as underactive thyroid, Cushing syndrome and polycystic ovary syndrome (PCOS).

Certain medicines also may cause weight gain, including some corticosteroids, antidepressants, and seizure medicines.[1]

- ***Stress, Emotional Factors, and Poor Sleep***

Some people eat more than usual when they are bored, angry, upset, or stressed.

Studies also have found that the less people sleep, the more likely they are to be overweight or obese. This is partly because hormones that are released during sleep control appetite and the body's use of energy.

- **Sedentary Lifestyle**

Most weight problems are life style problems. Sedentary life style is more common among people working on computers for more than eight hours a day. Children are also getting less exercise. In both children and adults excessive television viewing and computer use is linked with overweight.

RISKS OF BEING OVERWEIGHT

- **Type 2 Diabetes**

In diabetes, a metabolic disorder, the body is either incapable of producing sufficient insulin to regulate blood glucose levels or the insulin produced is unable to work effectively.The risk of Type 2 diabetes increases with obesity. A 2011 study published in Diabetes Care establishes the relationship between obesity and Type 2 diabetes and emphasizes on preventing obesity in order to benefit the incidence and care of Type 2 diabetes.To cut risk of developing Type 2 diabetes, one should try to lose weight, eat a balanced diet, get adequate sleep and exercise more.

- **High Blood Pressure**

A blood pressure of 120/80 mm Hg is considered normal.One can be said to be suffering from high blood pressure if the top figure is consistently 140 or higher and the bottom figure is 90 or higher.High blood pressure is a major risk factor for heart disease, and it has been found to increase with weight gain and age.A 2009 study highlights the connection between obesity and hypertension. The study emphasizes that weight loss, though difficult, must be the first line of therapy for treating hypertension.While obesity is associated with hypertension, one can also suffer from hypertension due to several other reasons, such as genetics, excessive drinking, high salt intake, lack of exercise, stress, and use of birth control pills.Whatever the reason behind high blood pressure, try to lose weight, follow the DASH (Dietary Approaches to Stop Hypertension) diet, avoid high dietary sodium, drink in moderation and make exercise a part of your daily routine.

- **High Cholesterol**

People who are overweight or obese are more likely to have high cholesterol, a condition in which the levels of low-density lipoproteins (LDL or 'bad' cholesterol) and triglycerides are too high and the level of high-density lipoproteins (HDL or 'good' cholesterol) is too low[4]Abnormal levels of these blood fats are a risk factor for coronary heart disease.A 2004 study published in the International Journal of Obesity analyzed the relationship between total cholesterol, age and BMI among males and females in the WHO MONICA Project.Apart from obesity, smoking, excessive drinking, increasing age, genetics, diabetes, high blood pressure, and kidney or liver disease also play a major role in highlevels of cholesterol More specifically, weight loss achieved through exercise is highly effective at raising HDL levels compared to dieting.

- **Heart Disease and Stroke**

Obesity causes a number of cardiovascular problems. With an increase in BMI, there is also an increased risk for heart disease. Obesity leads to the buildup of plaque (a waxy substance) inside the coronary arteries that supply oxygen-rich blood to heart. Plaque obstructs blood flow to the heart.Moreover, obesity may cause or contribute to alterations in cardiac structure and function. The risk of sudden cardiac death as well as a stroke is also increased with obesity. A 2009 study published in the Journal of the American College of Cardiology summarized the adverse effects of obesity on cardiovascular disease risk factors and its role in the pathogenesis of various cardiovascular diseases.

- **Cancer**

Cancer occurs when certain cells in the body start growing abnormally or out of control[4] While there are several risk factors for developing cancer, being overweight is one of them. Obesity increases the risk of developing certain cancers, such as breast, colon, rectum, uterus, gallbladder and kidney cancerIn fact, death due to cancer in obese people is also highA 2003 study published in the New England Journal of Medicine reports that higher BMI in both men and women was significantly associated with higher rates of death due to cancer.Later, a 2013 study published in the Journal of Obesity also shed light on the connection between obesity and cancer, irrespective of gender and site specification.Maintaining a healthy weight through healthy eating and physical activity plays a key role in reducing the rise in cancer risk.

- **Sleep Apnea**

Sleep apnea is a common sleep disorder in which there are brief pauses in breathing or shallow breaths during sleep. It causes restless sleep throughout the night and leads to sleepiness during the day. It also causes heavy snoring.Obesity is one of the leading risk factors for sleep apnea. An overweight person may have more fat stored around their neck, making the airway smaller and breathing difficult.Studies show that obesity is a potent risk factor for the development and progression of sleep apnea and is due to the distribution of adiposity between the central and peripheral compartments.

- **Fatty Liver Disease**

Fatty liver disease (both alcoholic as well as nonalcoholic) is common in obese people. In this condition, fat builds up in the liver and causes inflammation or scarring.It can ultimately lead to severe liver damage, cirrhosis (scar tissue) or even liver failure.A 2008 study published in the Journal of Clinical Endocrinology & Metabolism reports that liver disease of metabolic origin, associated with obesity, is a common liver disease in Western countries. The study stresses adopting a healthier lifestyle to reduce the risk of obesity-associated liver disease.A 2016 study published in the Journal of Lipid Research reports that it is likely that it is the saturated fat, not unsaturated fat, that raises sphingosine-1-phosphate (S1P) levels in obese people, and S1P unleashes the inflammation that characterizes nonalcoholic fatty liver disease.

- **Gallbladder Disease**

Gallbladder disease and gallstones are more common in overweight people. Excess cholesterol is one prominent reason behind gallstones, pebble-like materials that develop within the gallbladder.Studies have shown that people with an abnormally high BMI are at a higher risk of suffering from gallstone disease. In fact, abdominal fat increases the risk of gallstone disease more.A 2012 study published in the Journal of Pediatric Gastroenterology and Nutrition analyzed data of 510,000 children, ages 10 to 19, and concluded that obese children, especially females, were more likely to have gallstones

- **Reproductive Problems**

Obesity can cause menstrual issues and infertility in women, and erectile dysfunction, low sperm count and other sexual health issues in men.A 2015 study states that overweight women have a higher incidence of menstrual dysfunction and anovulation. They have poor reproductive outcomes in natural as well as assisted conception. A 2010 study published in the Journal of Human Reproductive Sciences highlighted the impact of female obesity on the outcome of fertility treatment.Gradual and sustained weight loss regularizes menstrual cycles and increases the chance of spontaneous ovulation and conception in overweight and obese women.Obesity even affects fertility in men. A 2012 study published in the Archives of Internal Medicine reports that men who are overweight or obese are at a greater risk for infertility.

- **Osteoarthritis**

Obesity is one of the contributing factors of osteoarthritis, a common joint problem of the knees, hips and lower back.Extra body weight puts more pressure on the joints and even wears away the cartilage, the tissue that normally protects the joints .A 2013 study published in the Indian Journal of Medical Research also made it clear that obesity contributes to the incidence and progression of osteoarthritis, with the strongest relationship being at the knee.

MANAGING OBESITY BY DIETARY INTERVENTIONS

Weight Management is the adoption of healthful and sustainable eating and exercise behaviours indicated for reduced disease risk and improved feelings of energy and wellbeing. Weight management techniques encompass long-term lifestyle strategies that

promote healthy eating and daily physical activity.Moreover, weight management involves an understanding of meaningful ways to track weight over time and set ideal body weights for different individuals.Weight management does not include fad diets that promote quick, temporary weight loss. It focuses on the long-term results that are achieved through slow weight loss, followed by retention of an ideal body weight .

- **Increase intake of proteins**

The satiating property of dietary protein is influenced by the time of protein consumption. Studies have shown that protein intake at breakfast has a greater satiety effect than later meal times. Firstly, protein has a greater thermogenic effect than carbohydrates and fat, which enables the body to burn more calories. Secondly, a high protein breakfast appears to slow gastric emptying, which attributes to the fact that protein appears to be the most satiating macronutrient.Finally, a high protein breakfast increases the activity of glucagon,[7] which activates the pathways for glucose synthesis. One study showed that fat loss was approximately twice as much in the high-protein diet group than the moderate-protein diet group in overweight and obese individuals.

- **Plate size**

Using smaller plates helps to consume smaller portion sizes and this leads to the consumption of fewer calories.People who are presented with larger portions do not report to have a higher level of satiety, which suggests that hunger and satiety signals are ignored when a large portion of food is placed in front of them.

- **Eat more soup**

Soups have a significant satiety effect. Studies have demonstrated that compared to solid foods, soup ingestion decreases the amount of energy intake.Compared to having no soup, it has been shown that eating soup reduces total energy intake of a meal. When soup is consumed before a meal, a decrease of 20% of energy is consumed in the meal.

- **Choose low calorie food**

A moderate decrease in caloric intake will lead to a slow weight loss, which may be more beneficial for long term weight management. For example, choosing a black coffeeinstead of a full fat latte will save calories that will add up in the long run. Low fat meals reduce the total amount of calories consumed.

- **Eating more dairy products helps in fatloss**

A diet high in dairy decreases total body fat. This occurs because a high amount of dietary calcium increases the amount of energy and fat excreted from the body. A possible explanation to this phenomenon is that high intakes of calcium cause calcium soap formation and/ or binding of bile acids in the intestine.Other studies specifically show that dairy sources of calcium demonstrate greater weight loss than supplemental calcium intake.[1] This may be due to the other bioactive components present in milk, which may aid in metabolic efficiency and fat loss

- **Incorporating more vegetables into meals**

Fruits and vegetables have been shown to increase satiety and decrease hunger.

These foods have a low energy density, which is mainly due to the high water content and partly due to the fiber content.The reduction of energy density has been shown to enhance satiety. The water adds weight, without adding calories and the fiber

slows gastric emptying. Both of these factors contribute to the satiating effect of vegetables and fruits. Studies have also shown that fiber decreases hunger and also decreases total energy intake.

- **Fiber**

Dietary fiber has been suggested to aid weight management by inducing satiety, decreasing absorption of macronutrients and promoting secretion of gut hormones. Dietary fiber consists of non-digestible carbohydrates and lignin, which are a structural component in plants. Fiber recommendations range from 10 – 13 grams/1000 calories, with slightly higher recommendations for men.Due to the high volume or water content of fiber-rich foods, fiber displaces available calories and nutrients from the diet.. Satiety is also induced by increasing chewing, which limits food intake by promoting the secretion of saliva and gastric juice, resulting in an expansion of the stomach. Fiber may have the added benefit of helping consumers decrease food intake throughout the day. In general, large intakes of dietary fiber at breakfast are associated with less food intake at a lunch.

- **Caffeine**

Caffeine and black coffee have been associated with increased energy expenditure and subsequent weight loss.Caffeine belongs to a class of compounds called methylxanthines, and is present in coffee, tea, cocoa, chocolate and some cola drinks.Caffeine induces a thermogenic effect in the body by increasing sympathetic nervous system activity, which is an important regulator of energy expenditure.

- **Green tea**

Green tea has been associated with decreasing blood glucose, inhibiting hepatic and body fat accumulation, and stimulating thermogenesis due to the catechins that are present. Catechins are polyphenols that are a major component of green tea extract. Green tea has also been shown to increase energy expenditure and fat oxidation in humans, independent of the caffeine content. In a human study conducted, 690 mg of catechins daily for 12 weeks reduced body fat, suggesting that green tea might be useful in the prevention of chronic disease, particularly obesity. Moreover, catechins in the brain play a major role in satiety.

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