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Research Article

Prevention Of Obesity - The First And Foremost Strategy For Mankind To Prevent Lifestyle And Non-Communicable Diseases

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ABSTRACT

Obesity is spreading like a wild fire leading to a 'disease shock wave' across the globe. As per the latest WHO-Global Health Observatory data, more than 2.5 billion adults are overweight, which means close to 30% of world population is overweight, in which 880 million of these individuals suffer from multiple obesity based lifestyle diseases like high Blood pressure, high cholesterol/lipid levels, Diabetes, joint pains, heart diseases, PCOD & depression etc. The obesity catastrophe doesn't stop here, around 200 million children suffer from obesity world wide with juvenile diseases and it leads to 5 million deaths per year and all these data clearly proves prevention of obesity becomes the top most priority and a disciplined lifestyle backed by regular exercises and right eating strategies will play a significant role in the prevention of lifestyle & non-communicable diseases. The longer a person is obese, the more significant obesity-related risk factors become. Given the chronic diseases and conditions associated with obesity and the fact that obesity is hard to treat, prevention is extremely important. A primary reason that prevention of obesity is so vital in children is because the likelihood of childhood obesity persisting into adulthood increases as the child ages. This puts the person at high risk of diabetes, high blood pressure, heart disease and even death.

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INTRODUCTION

Obesity makes up one of the leading preventable causes of death in the world. Overweight means that you have extra body weight and Obesity means having a high amount of extra body fat. Being overweight or obese raises our risk for health problems; they are coronary heart disease, Type 2 diabetes, Asthma, High cholesterol, Osteoarthritis, High blood pressure, Sleep apnea, some types of cancer. BMI is a measure of body weight as it relates to our height. BMI often gives us a good idea of the amount of body fat we have. But these people are not considered overweight because muscle tissue weighs more than fat tissue. Increased stomach fat is linked to type 2 diabetes, high cholesterol, high blood pressure, and heart disease. Experts don't know exactly how your body regulates your weight and body fat. A person who eats more calories they use for energy each day will gain weight [1]. But the risk factors that determine obesity can be complex. They are often a combination of your genes, socioeconomic factors, metabolism, and lifestyle choices. Some endocrine disorders, diseases, and medicines may also affect a person's weight. Likelihood of becoming obese is passed down through a family's genes. Most researchers think that it takes more than just 1 gene to cause an obesity epidemic. They are continuing to do more research to better understand how genes and lifestyle interact to cause obesity. Because families eat meals together and share other activities, environment and lifestyle also play a role. Genetics is one of the key factors to cause obesity [2]. Metabolism and hormones differ from person to person and these factors play a role in how much weight you gain. Researchers have found that ghrelin may help set off hunger and there is another hormone called leptin which can decrease appetite. Another example is polycystic ovary syndrome (PCOS), a condition caused by high levels of certain hormones. A person with PCOS is more likely to be obese. Socioeconomic factors may affect our health. This is especially true among minority groups. Overeating and a lack of exercise both contribute to obesity. But you can change these lifestyle choices. If we don't get much of any exercise, we'll find it hard to lose weight or maintain a healthy weight [3]. Medicines like corticosteroids, beta-blockers, some anti-depressants, and anti-seizure medicines can cause you to gain some extra weight [4]. Emotional eating–eating when you're bored or upset–can lead to weight gain. Too little sleep may also contribute to weight gain. People who sleep fewer than 5 hours a night are more likely to become obese than people who get 7 to 8 hours of sleep a night [5]. This also leads to High Blood Pressure, the more circulating blood and more resistance also means more pressure on the artery walls. Higher pressure on the artery walls increases the blood pressure. Excess weight also raises blood cholesterol and triglyceride levels and lowers HDL (good) cholesterol levels, adding to the risk of heart disease [6]. Obesity is the major cause of type 2 diabetes. Obesity can make your body resistant to insulin, the hormone that regulates blood sugar. When obesity causes insulin resistance, your blood sugar level rises. Even moderate obesity dramatically increases the risk for diabetes [7]. Atherosclerosis, or hardening of the arteries, happens more often in obese people. Coronary artery disease is also more common in obese people because fatty deposits build up in arteries that supply the heart. Narrowed arteries and reduced blood flow to the heart can cause chest pain called angina or a heart attack. Blood clots can also form in narrowed arteries and travel to the brain, causing a stroke [8]. Obesity can affect the knees and hips because extra weight stresses the joints. Joint replacement surgery may not be a good choice for an obese person. That's because the artificial joint has a higher risk of loosening and causing more damage [9]. Sleep apnea is also

caused by obesity and this makes people to stop breathing for brief periods during sleep. Sleep apnea interrupts sleep. It causes sleepiness during the day. It also causes heavy snoring. Sleep apnea is also linked to high blood pressure, increased risk for heart disease, stroke, diabetes, and can even cause an early death. Breathing problems tied to obesity happen when added weight of the chest wall squeezes the lungs, this restricts breathing [10]. Among obese people assigned female at birth, the risk increases for cancer of the endometrium or the lining of the uterus. Obese people assigned female at birth also increase their risk for breast cancers in those who have gone through menopause. People assigned male at birth who are overweight have a higher risk for prostate cancer. People who are obese are at increased risk for colorectal cancer [11]. Metabolic syndrome is related to obesity and it has several major risk factors and they are increase in waist circumference, high blood triglyceride levels, low HDL cholesterol levels, high blood pressure, and insulin resistance (severe type 2 diabetes). Having at least 3 of these risk factors confirms the diagnosis of metabolic syndrome [12]. People who are overweight or obese can have problems socially or psychologically. It's not uncommon for people who are overweight or obese to earn less than other people. Some people's disapproval and bias against those who are overweight may lead to discrimination and even bullying. Depression and anxiety are more common in people who are overweight and obese [13].

2. Major diseases due to obesity

Heart disease (acute coronary syndrome), stroke (intracerebral and subarachnoid hemorrhage), kidney disease (hypertensive nephropathy) and visual problems (retinopathy) are disasters waiting to hit you when you become obese or overweight. Away from the image of high blood pressure wreaking havoc, let us get more prosaic for a moment and have some issues snore at night, frequently wake up at night gasping for breath, feel fatigued throughout the day. We can justify that we might be suffering from what we call Obstructive Sleep Apnea (OSA), simply because one of the prime causes of this condition is higher body weight. OSA not only causes high blood pressure, but in certain situations can even lead to sudden, inexplicable deaths [14]. The accumulation of an excessive amount of body fat can cause type 2 diabetes, the cellular and physiological mechanisms responsible for the link between obesity and type 2 diabetes are complex and involve adiposity-induced alterations in β-cell function, adipose tissue biology, and multi-organ insulin resistance, which are often ameliorated and can even be normalized with adequate weight loss [15]. Cardiovascular disease (CVD) mortality and morbidity has been shown to be elevated in individuals who are overweight, particularly with central deposition of adipose tissues. Abdominal obesity has been shown to be a risk factor for CVD worldwide. Obesity may be associated with hypertension, dyslipidemia, diabetes, or insulin resistance, and elevated levels of fibrinogen and C-reactive protein, all of which increase the risk of CVD events. In addition to CVD, obesity has been shown to increase stroke, myocardial infarction (MI), heart failure, and arterial aneurysm, and is a leading cause of chronic kidney failure. Moderate elevation of arterial blood pressure leads to shortened life expectancy, which also increases the risk of heart diseases [16]. Obesity leads to cancer, experts believe it’s largely due to the inflammation caused by visceral fat – the fat that surrounds your vital organs. The problem with excessive visceral fat is that it affects certain processes in your body. This includes how your body manages hormones, like insulin and estrogen. Visceral fat cells are large, and there are a lot of them. This excess fat doesn’t have much room for oxygen. Long-term inflammation caused by excess visceral fat can damage your body and increase your risk for

cancer [17]. Obesity leads to PCOS/Polycystic ovary syndrome, obesity sensitizes the cal cells to LH stimulation and amplifies functional ovarian hyperandrogenism by upregulating ovarian androgen production. Obesity increases inflammatory adipokines which, in turn, then promote hyperinsulinemia. Obesity increases insulin resistance and compensatory hyperinsulinemia, glucose intolerance, dyslipidemia, and increases risk of pregnancy complications in women [18]. One study found that adults with excess weight had a 55% higher risk of developing depression over their lifetime, there are also obesity-related health factors that can negatively influence mental health. Mounting evidence reveals that the psychiatric consequences of obesity stem from poor diet, inactivity, and visceral adipose accumulation. Resulting metabolic and vascular dysfunction, including inflammation, insulin and leptin resistance, and hypertension, have emerged as key risks to depression and anxiety development [19].

3. The connection between obesity and inflammation

Obesity based high cholesterol and blood pressure is major risk factors for heart disease. Recent research clearly states inflammation plays a key role, and that working to reduce it can prevent heart attacks and strokes. "Just like we're targeting blood pressure, cholesterol and blood glucose, we also need to target inflammation; we all should be making an effort to reduce chronic inflammation in our bodies which increases with increase in the excess fat levels in the body. However, what the experts didn't know was whether anti-inflammatory treatments could prevent those events from occurring [20]. People treated with the novel anti-inflammatory treatment reduced their likelihood of subsequent heart attacks or strokes by 15 percent. It also decreased the need for major interventions such as angioplasty and bypass surgery by 30 percent, proving that addressing inflammation to prevent heart disease is essential. Additional studies are now looking at whether older, cheaper medications taken by mouth (colchine and methotrexate) can have similar heart protection benefits [21]. Inflammation is part of your body's immune response to an illness or injury. When you have a wound or an infection, inflammation helps fight off germs and facilitates healing. But obesity based inflammation may promote the growth of plaques, loosen plaque in our arteries and trigger blood clots — the primary cause of heart attacks and strokes. When a blood clot blocks an artery to the heart, we have a heart attack. If the blood clot blocks an artery to the brain, the result is a stroke [22]. "The good news is that you can control inflammation by avoiding factors that activate your body's inflammatory response through right lifestyle choices," says Michos. "And, these same lifestyle choices decrease bad cholesterol, lower blood pressure and reduce high blood sugar, too." [23]. Being overweight increases our risk for multiple diseases. But carrying excess fat around our belly is a red flag for heart disease risk. A type of fat that accumulates in the belly (called visceral fat) secretes a molecule that causes inflammation. Exercising for as little as 30 minutes a day can decrease inflammation. Moderate workouts, such as fast walking, are effective. Processed and fast foods produce inflammation. Whole foods, on the other hand, are anti-inflammatory. Eat more fruits, vegetables, whole grains, beans, nuts and fatty fish. Chronic inflammation doesn't produce symptoms — the only way to measure it is with a blood test, and most people aren't regularly screened for inflammation. Making healthy lifestyle choices is the best way to lower that risk factor, although doctors may also prescribe a statin drug for those with a higher risk of heart disease. Cholesterol is a natural component in everyone's blood, and supports functions within the body. It's only when bad cholesterol caused by obesity leads

to inflammation and causes plaque to build up in your arteries that it's considered a major risk factor for heart attack, heart disease and stroke [24].

4. Root cause for Obesity

Wrong Diet/eating habits and sedentary lifestyle factors contribute to development of obesity and overweight. Some of the most common ones are eating large amounts of processed, junk or fast food, this is food that's high in fat and sugar. Drinking too much alcohol and alcohol contains a lot of calories. Eating lot of outside food, food cooked in a restaurant may be higher in fat and sugar.Eating larger portions than the bodies requirement, drinking too many sugary drinks, including soft drinks and fruit juice. Comfort eating, some people may go for comfort eating due to many other factors affecting their life such as low self esteem or low mood. Finally, late night eating habits also leads to obesity. Lack of physical activity/exercises is another important factor leading to obesity. Many people have jobs that involve sitting at a desk for most of the day. They also rely on their cars, rather than walking or cycling. For relaxation, many people tend to watch TV, browse the internet or play computer games, and rarely take regular exercise. If you are not active enough, you do not use the energy provided by the food you eat, and the extra energy you consume is stored by the body as fat leading to obesity [25].

5. Obesity Prevention Strategies

Preventing obesity involves making healthy lifestyle choices every day. To prevent obesity, you need to stay active, follow a healthy diet, and get adequate sleep along with stress management.

A. Right eating to Prevent Obesity:

Obesity can be prevented by following basic principles of healthy eating which includes eating more fruits and vegetables, Avoiding processed/fast & junk foods, Limiting Sugar and Artificial Sweeteners, Reducing saturated fats & excess carbs, Avoiding outside food & having home cooked food. Eating a diet rich in fruits and vegetables decreases the risk of obesity. Fruits and vegetables contain a variety of beneficial nutrients and are associated with a lower risk for diabetes and insulin resistance [26]. They are also high in fiber, which keeps you feeling full with fewer calories and ensures your digestive system stays regulated. Highly processed foods, like white bread and many boxed snack foods, are a common source of empty calories, which tend to add up quickly. A 2019 study found that people who were offered a highly processed diet consumed more calories and gained weight, while those offered a minimally processed diet ate less and lost weight [27].

B. Exercising to Prevent Obesity:

Most national and international guidelines recommend that the average adult get at least 150 minutes of moderate-intensity physical activity per week. That means at least 30 minutes per day, five days per week. Researchers have also found that people who walk at a brisk or fast pace are more likely to have a lower weight, lower BMI, and lower waist circumference compared to individuals doing other activities. In addition, experts recommend keeping active throughout the day, whether by using a standing desk, taking frequent stretch breaks, or finding ways to work in walking meetings throughout your day [28].

C. Reducing Stress to Prevent Obesity:

Chronic stress raises levels of the stress hormone cortisol and leads to weight gain. It can also result in poor dietary choices, as cortisol and other stress hormones can increase "carb cravings" and make it difficult to exercise good judgment and willpower [29].

D. Improving Sleep to Prevent Obesity:

The need to consider sleep hygiene as a modifiable lifestyle habit like diet and physical activity are the important strategies. Studies have linked later bedtimes to weight gain over time. One of these studies included 137,000 people from 26

countries. It showed that, compared to people who go to bed before 10 p.m., people who go to bed after 10 have a 20% greater risk of general and abdominal obesity. Meanwhile, the risk is up to 38% higher in people who go to bed after 2 a.m [30].

CONCLUSION

Obesity is often caused by a combination of risk factors, including genetics, poor diet, sedentary behaviors, medical conditions, and lack of access to healthy foods. This article discusses how to prevent obesity by following a healthy lifestyle which includes right diet, regular exercises, and lifestyle modifications, along with how these strategies can reduce your obesity risk leading to a disease free life. Preventing obesity involves making healthy lifestyle choices every day and for that you need to stay active, follow a healthy diet, and get adequate sleep which becomes the unfailing formula for a disease-free future for the mankind.

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