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# OBESITY: A REVIEW ON OVERWEIGHT AND INADEQUATE PHYSICAL ACTIVITY AND NUTRITIONAL BEHAVIORS

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## ABSTRACT

We studies all the review article related to obesity. The obesity is the disease in which imbalance between the calorie intake and its use. Obesity has reached epidemic levels in developed as well as in developing countries.it increasingly being observed with changing their life style of family. The mechanism of obesity is the unusual calorie convert into fat in adipose tissue. Adipose tissue consist of adipose cell and unusual calorie accumulate into the adipose cell they swell increase their weight and increase the body weight of the body. Globally in an analysis of 199 countries, 1.46 billion adults worldwide are estimated to being overweight, and 502 million are estimated as being obese. People are generally considered obese their when their body mass index (BMI) a measurements obtained by dividing a person weight by the square of the person height is over 30 $Kg/m^2$, with the reference range 25-30 $kg/m^2$ defined as overweight. Body Mass Index (BMI) is typical uses to explain the overweight and obesity in epidemiology studies. however, BMI has low sensitivity and there is larger inter individual changes in the percent body fat for any given BMI value, partially attribute to age sex and ethnicity. for instance Asian have greater percent body fat than Caucasians for the same BMI Greater cardiometabolic risk has also been associated with the localization of excess fat in the visceral adipose tissue and ectopic depots (such as muscle and liver) as well as in case of increased fat to lean mass ratio (e.g. metabolically obese normal weight). These data suggest the obesity may be fat more common and requires more urgent attention than what large epidemiology studies suggests. simply relying on BMI to assess its prevalence could hinder future interventions at obesity prevention and control. Causes of obesity both genes and envirommental factor participate in obesity However, by the large, genes are now thought to set only the stage and provide the background, against which the decisive effects and provide effects are eventually driven by the environmental and behavioral factors. AT the heart of the envirommental and behavioural factors are those that influence diet and physical activity. Pathophysiology of obesity continues to be among the top health concerns across the globe. Despite our failure the high prevalence of obesity, we now have a better understanding of its Pathophysiology, and how excess adiposity leads to type 2 diabetes, hypertension, and cardiovascular disease. lifestyle modification is recommended of obesity management, but many patient do not achieve long lasting benefits due to difficulty with adderence as well as physiological and neurohormonal adaption of the obesity in response to weight.

**KEYWORDS:** cardiometabolic, envirommental, neurohormonal.

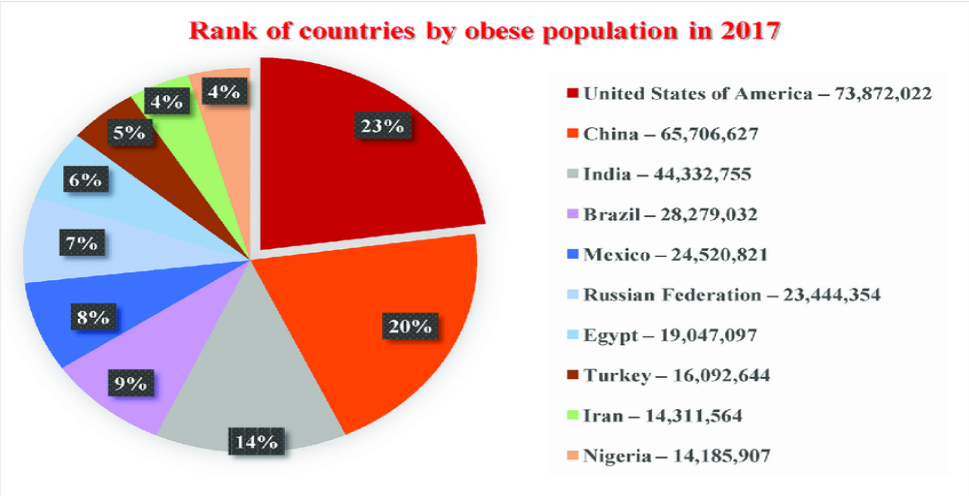
## INTRODUCTION

Obesity are increasing the problem that leads to influence on human health.[1] Over weight obesity are global problem and WHO predicts in 2015 approx 2.3 billion people worldwide will be overweight and more than 700 million people are obese.[2,4,6] Many cross-sectional studies have also documented that obesity is effect on the physical functioning, social and Mental Well being. obesity is basically the imbalance between calories intake and its use. Unusual energy are converted into fatty tissue in adipose cell into adipose tissue.[25] Its medical condition in which the increase amount of fat accumulates in body.[2] However, the method used directly measure body fat are not available. Obesity spread both children and adolescents in a world.[1,6] In India problem of obesity has been Scanitly explored even in the effluent population groups.they effect on their lifestyle obesity are mostly found in pubertal age groups of 13to15 because this pubertal age increased adipose tissue in all over body.[24] The childhood obesity is increased being with changing their family life style.[3,4] its cause increased amount of purchase powder, increasing hours of inactivity due to television, video game, and computer, and other social activaties.[1] WHO has described the obesity is one of today, s most effective in public health problems. overweight obesity associated with increased rates of chronic disease like sleep Apnea, osteoarthritis, Nonalcoholic Fatty Liver Disease(NAFLD), Hypertension, Cardiovascular Disease

and Stroke (CVDS) Eg. Heart failure, Cardic Rhythm Abnormalties, Coronaryheart.

Disease(CHD), Stroke insulin resistance, Diabetes, Cancer, Brest cancer, prostal cancer[1,3] coloreactal cancer etc.[23,24]

The epidemiology of obesity in a worldwide prevalence of overweight and obesity 1980 to an extent nearly a third of the world population is now classified as overweight or obese. Globally,an estimated 170 million children (aged <18 years) are estimated to be overweight.[3] almost one third of children and adolescents in the united states are either overweight or obese. The prevalence of obesity among children and adolescent tripled from the late 1970 to 2000.[13] The combination of increasing high fat food in our diet and low physical activity, it is the most common cause of obesity today studies have shown the obesity has killed more people then AIDS.[26] The purpose of discussing this paper increasing the obesity in North America and its complications. obesity spread in worldwide health probelums across the life spain that also effects the elderly in developed and emerging countries[8], in the united states, prevalence of obesity in the elderly ranges from 42.5% in women aged 60-69 years to 19.5% those aged 80 years or older. The prevalence of obesity is 38.1% in men aged 60-90 years and 9.6% for those men aged 80 years or older.[18] In young and middle aged people obesity present as an increase body weight and adipose tissue. But now obesity is more physiologically and antatomically complex and not so exactly quantifiable. Changing in composition of body through out the aging process increase changes in the amounts and distribution of muscle muscles and fat among race and ethnic groups that are not present at younger ages.[13,18] Obesity in adults associated with increase mortality,and data from Framingham Heart study reports that obese adults(BMI greater then 30) at age 40 years lived 6-7 years less than did their normal weight. another study based on several U.S data sets US life tables (1999), the third national health and nutrition examination survey (NHANES 3), NHANES 1 AND 2, and the NHANES 2 also reported that obesity decreased life expectancy, particularly so in younger adults.[13] The aim of systemic literature review and critically asses currents scienctific and clinical information on the impact of obesity t. This knowledge can help to reduce the cost of health care and improve the quality of life in this segment of the worlds population.[5,6]



**CLASSIFICATION OF BODY MASS INDE**

**Classification on the basis of overweight obesity[4]**

| Classification | BMI(kg/m$^2$) |
|---|---|
| Healthy weight | 18.5-24.9 |
| Overweight | 25-29.9 |
| Obesity 1 | 30-34.9 |
| Obesity 2 | 35-39.9 |
| Obesity 3 | 40 or more |

**BODY MASS INDEX**

BMI is employed to live the body fat of the adult girls and men in line with BMI formula its a lot of correct technique to spot the entire body fat calculate supported height and weight. BMI (Body mass index) is calculated by taking the weight in kilograms(kg) and dividing by the height in meters square (m2).[37]

Body mass index calculation formula

BMI (body mass index) =Weight (kg) /Height (m$^2$)(38)

**CAUSES OF OBESITY**

The imbalance between energy intake and energy utilize causes determines person weight. If a person intake more calories than he or she burns (Metabolize), the person gain weight more (the body will store excess energy as fat). If a person intake few calories than he or she metabolizes, he or she will lose weight. Therefore, the most common causes of obesity are as follows.[32]

1. Physical inactivity.
2. Health risks.
3. Genetics.
4. Diet.
5. Exercise.
6. Additional factor
7. Socioeconomic factors.
8. Eating disorder
9. Food Advertising

**Health risks**: obesity is produced with many negative issues including early mortality. Overweight increases causes the risks factor of cardiovascular disease[32], certain cancer, Diabetes, and death and other problems associated with overweight obesity is such as.

- ✓ Hypertension
- ✓ Osteoarthritis.
- ✓ Gallstones.
- ✓ Dyslipidemia
- ✓ Musculoskeletal issues,and
- ✓ Psychological and Psychosocial issues.

**Genetics:** In ancient times the research is continue over the significant link between obesity and genetics.[42,43] if one parent is obese than increase Than increase the risks of developing the obesity significantly increases. if obesity is present during early childhood, chances are high that an individual will be obese throughout his or her life. Another important consideration of childhood obesity is weight of the mother at a time of given birth.[43] The weight of the mother predicts the weight of the new born and additionaly the weight of new born also may predict the weight of a child A study of demark of 250,000 children indicated that new born with a weight of a atleast 10 pounds were twice as likely to become over by the age of 13 than those with birth weights of about seven pounds.[40]

**Diet**: it is main source of obesity. unhealthy dietry practices causes obesity include being eating.[36] fast food and soft drink which are high amount of calories, from either fat and sugar. It is a trend to becoming a food restaurant open 24 hours at night.High fat diet promote more energy intake by passive consumption.The amount of food that cause obesity depends upon the several factors.[32]

- Food deprivation.
- Sleep.
- Prior experiences.
- Estrogen level.
- Accessibility.
- Perceived calories.

**Exercise:** Another major issuse of obesity is lack of exercise. Energy in balance is one in every of the foremost vital issuse that relates to obesity. Being overweight and obese result from an energy imbalance caused by intake too several calories and not doing corect exercise.[26] Calories balance and weight are usually maintained by reconcillation calories consumed against calorie used by traditional bodily function and exercise.[26,30] Thus use of many calorie as expand and vice versa, A Person,s weight will remain stable obesity results if the food intake excessive and physically activity is abnormal than large amount of fat are stored with in body.[30] According to a survey done by the 2000 National collage health assessment 57%of male and 61% of female collages students reported they had completed no physically activity on at least three of the previous seven day.[32]

**Additional factor:** There are several additional factor that can cause the obesity and it includes various forms of factors are as follows.

- Pollution.
- Sleep.
- Depression.
- Medication

Pollution: Endocrine disruptors, which manipulate the hormone that control body weight, are thought to be potential cause of obesity. these disruptor have numerous common sources such pharmaceuticals, plastics, food, and toys. Additionally, chemical pollutions such as benzo[a]pyrene have been shown to induced obesity.[36]

Sleep: Research indicates a link between obesity and lack of sleep. The national health and nutrition examination survey(NHANIES) of more then 9,000 participents in 1982-1984 determined that those getting less then seven hour of sleep at night were more likely to obese.[32,36] studies have made it clear that lack of sleep is

linked to obesity in a variety of ways including depressed disturbances and fat reduction. Another relationship, present but causally unclear, is the link between depression and obesity.[36]

Depression: we studied here and show that people have a 55% chance to becoming depressed over time and depresses people have a 85% chance becoming obese over time.[37] Depression may relates to obesity and also obesity may also relates to depression.

Medication: Although most type of numerous drug are prescribed to treat obesity, most of medicine cause weight gain as an unintended side effect.[36] certain antidepressants, anticonvulsants, diabetes, medication, hormones, and most corticosteroid can contribute the potential for obesity.[36,37]

**Socioeconomic factor:** people with lower income tend to consume a high-fat, energy dense diet because it is more affordable than a healthier diet comprised lean meats, fresh fruits, and vegetables.[26] Study have shown that diets based on energy-dense food are less satisfying, nutrient deficient, and may lead to passive overeating.[25] If there is correlation between rising obesity rates and a growing price gap between healthy and unhealthy foods,it has been suggested that current obesity prevention strategies will need revision Data shows that low income consumer are more sensitive to price elasticity than high income consumer for fresh fruit and vegetables. this means that a price change of those foods has a larger impact on the purchasing decisions of lower income consumer than with higher incomes.[27]

**Eating Disorder:** There is a link between dieting, and obesity. while dieting is often conceived as a solution ton arising obesity epidemic, a number of studies suggest that dieting is not effective in preventing weight gain[32] and in some cases dieting may actually be associated with an increased risk of obesity among children and adolescent.[32] dieting may promote weight loss but restrictive eating disorder known to contribute to obesity: binge eating disorder(BED) and night eating syndrome (NES) BED is the most common eating syndrome affecting three percent of adults in the US, and is most common among severely suggested that dieting is a precursor for binge eating disorder.[30] Adolescent girl that diet have three time the chance of becoming obese than those that do not diet. This is because of the cyclical pattern of restrictive eating following by overeating or binge eating.[30,31] Night eating syndrome is more common in obese people than non obese people. it affects about 33% of morbidly obese person (those who are 100 pounds or more overweight) and its prevalence increase the weight.studies indicate that those with NES often suffer from a type of depression that increase as the day progress. Therefore, there is additional evidence that supports a link between depression and obesity.[36]

**Food Advertising:** According to a latest study published in American journal of public health, childhood obesity is directly related to children,s exposure to television commercials that advertise unhealthy food.[36] Researchers gathered data from primary care provider of over 3,000 children ranging from infants to 12 year olds regardind their television viewing inhibits and the format of TV entertainment, such as DVDs, cable television.[26], etc over the course of 5 years they found that commercial viewing (e.g viewing non-educational programs containing commercials) was positively associated with higher BMI, while non commercials viewing (like DVDs or educational television programming) had no significant association with obesity.[21] The study suggests that turning kids away from commercials television could help in reducing childhood obesity.[22]

## PATHOPHYSIOLGY OF OBESITY

The wealth of keep fat is needed for endurance throughout healthfully denied states, for instance, starvation. within the inside of delayed plenteousness of nourishment, however, economical fats tockpiling brings concerning the unreasonable storage of fat, within the long-term leading to fleshiness.[51] It's been guessed that the storage of unsaturated fat i.e. fatty acids as triacylglycerol within adipocytes secures against unsaturated fat toxicity; in any case, free unsaturated fats would freely flow into within the vasculature and manufacture aerophilic stress by scattering at some point of the body. All the same, the steep storage that creates fleshiness within the long-term prompts the discharge of excessive free faty acids from upgraded lipolysis, that is activated by the improved sympathetic stimulation existing in obesity.[52] The discharge of those unreasonable free fatty acids at that time induces lipotoxicity, as lipids and their metabolites build chemical agent stress to the endoplasmic reticulum and mitochondria. This influences fat even as nonadipose tissue, representing its pathophysiology in various organs, for instance, the liver and duct gland, and within the metabolic syndrome.[51,52] The free unsaturated fats discharged from too keep triacylglycerol stores in addition restrain lipogenesis, obviation satisfactory clearance of liquid body substance triacylglycerol levels that conributes to hypertriglyceridemia. unleash of free unsaturated fats by epithelial tissue compound protein enzyme from augmented liquid body substance triglycerides inside raised β lipoproteins causes lipotoxicity that outcomes in insulin-receptor disfunction.[40,41] The next insulin resistant state makes hyperglycemia with stipendiary viscus gluconeogenesis. this will result in the increased amount of glucose in the blood. The last will increase viscus aldohexose production, more light the hyperglycaemia led to by hypoglycaemic agent resistance.[46] Free unsaturated fats in addition decline usage of insulin-stimulated muscle aldohexose, tributary more to hyperglycaemia. Lipotoxicity from excessive free unsaturated fats likewise diminishes secretion

of exocrine gland exocrine gland hypoglycaemic agent, that within the finish ends up in ends up in.[39]

## COMPLICATION OF OBESITY

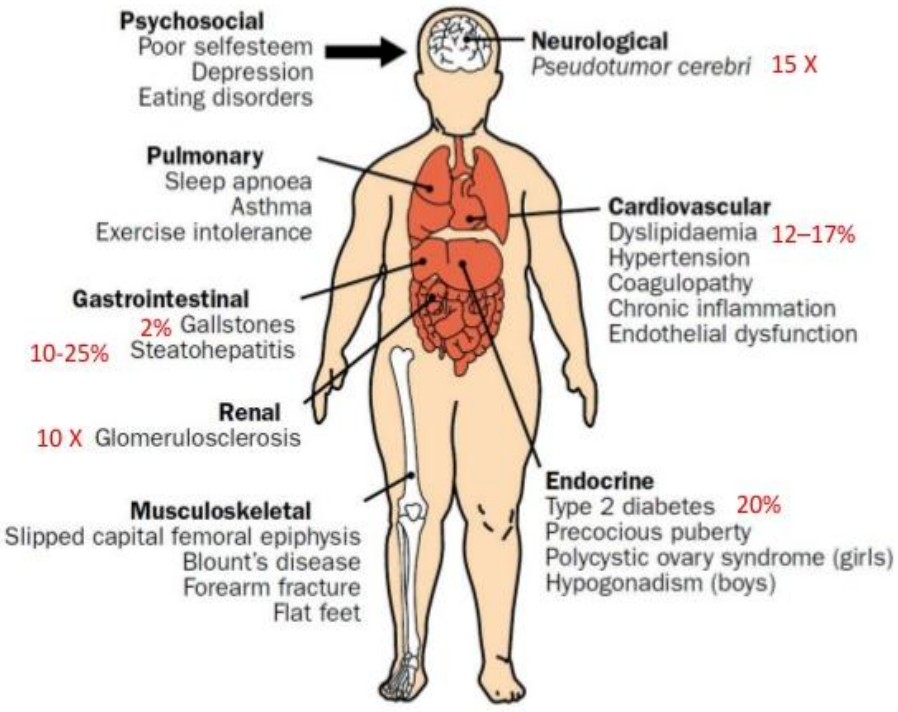
**Psychosocial:** fat people area unit usually exposed to public disapproval and stigma thanks to the their weight, with girls expertise discrimination. notably in girls and younger individuals, whereas weight loss is associated with improved mood adolescent WHO area unit fat or understand themselves such, are a lot of possible to interact in risk behavior than those of traditional weight this will involve drug abuse, risky sexual behavior or violence.[42]

• **Neurological disease:** tube-shaped structure risk issue like high blood pressure, Dyslipidaemia associated illness} area unit all associated with augmented risk of insanity an d Alzheimer disease.[42] The freelance relationship between blubber and insanity could be a very little a lot of difficult. In a review found that 5 out of 9 studies according and freelance association between high BMI and risk of insanity.[43]

• **Musculoskeletal:** blubber is related to lack of exercise or physical activity levels and it's the most one among the danger issue of degenerative joint disease. the best impact in knee, however there's conjointly augmented risk in hand joints, diverging lower back pain is augmented blubber, furthermore as those with low levels of physical activity (440. blubber is the strongest modifiable for urarthritis, with fat men having a relative risk of 2-3 compared with lean subjects. Weight loss has been found to decrease the risk of repeated urarthritis attacks, whereas weight gain makes it a lot of possible.[43,44]

• **Gastrointestinal:** Non alcoholic fatty malady|disease} ( NAFLD) is currently the commonest causes of chronic liver disease worldwide, calculable to be gift 20-30% of adults within the developed world. NAFLD is taken into account the internal organ manifestation of metabolic syndrome and its risk is powerfully correlate with BMI.[46]

• **Kidney disease:** overweight blubber area unit risk issue for high blood pressure,diabetes, and alternative conditions related to impaired urinary organ function.[45]




## TREATMENT OF OBESITY

Centrally acting anorexiant

The search of a good anti-obesity medication dates back to 1930 with dinitrophenol that was withdrawn due to risks of pathology and contracts. the positioning for action of pathology is that the appetite/satiety centre in neural structure.Inhibiting the uptake NE or 5-HT ever enhancing their neurotransmission.[33,44,35]

•.Classical noradrenergic agents embrace mazindol, Benzamphetamine, phenteramine, Diethylpropion.

• Sertonergic agents embrace fenfluramine, dexfenfluramine and lorcaserin.

• Mixed Noradrenergic/Serotonergic agent embrace sibutramine.

• All the medication except lorcaserin area unit withdrawn from the market.

• Mentioned noradrengeric medication were disclosed due to aspect effects like sleep disorder, tremors, addiction, liability.[33,34] Fenfluramine and dexfenfluramine were withdrawn attributable to varied

side impact, like pneumonic high vital sign and sharp deaths notably with fenfluramine and phentramine combination. Sibutramine was withdrawn in 2010 due to concern cardiotoxicity.[34,35]

Currently approved medication during this category are:
• Lorcaserin
• Fixed dose combination of phenteramine and topiramate named Qsymia
• Nsltrexone and bupropion.
• Liraglutide, Albiglutide, Dulaglutide.
LORACASERIN(App June 2012)
• Selective 5-HT receptor agonist
• Dose 10mg double daily mediate a mean weight loss patients. QSYMIA(App Gregorian calendar month 2012).
• ER combination of phentermine and topiramate.

- Dose PHEN/TPM 3.75/23 mg given in morning time for 14 days.
- It is also given once in the morning from day 15 for 10 weeks.[33,34]
  NALTREXONE AND BUPROPION COMBINATION (App 2014)
- Week 1-one tablet morning
- Week -2 one morning and one evening
- Week-3 tow tablet in the morning and one evening

**SURGERY**

If the drug treatment of obesity does not give desired reduction in the weight loss then bariatric surgery is a treatment option.

Three types of surgeries are recommended.
1. Roux-en Y Gastric Bypass (RYGB) surgery
2. Gastric banding
3. Sleeve gastrectomy[33,34]

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