

Chronic Diseases Linked with Obesity

Fatima Irfan

University of Lahore, University Institute of Diet and nutritional Sciences, Pakistan

*Corresponding author

Fatima Irfan, University of Lahore, University Institute of Diet and nutritional Sciences, Pakistan; Contact No. 00923008433627; E-mail: fatimairfantajamul@gmail.com

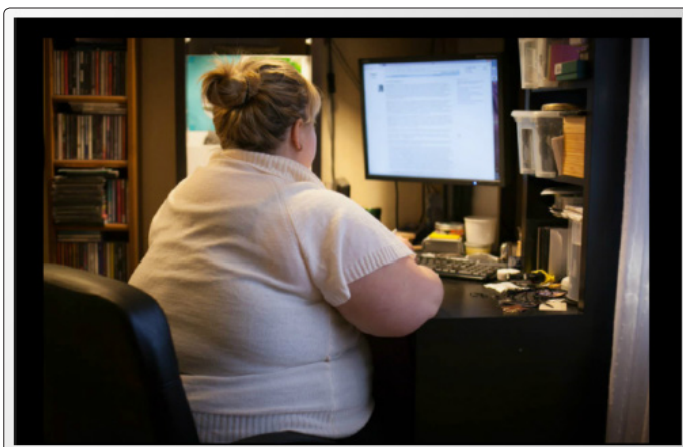
Submitted: 22 Oct 2018; Accepted: 04 Nov 2018; Published: 19 Nov 2018

Abstract

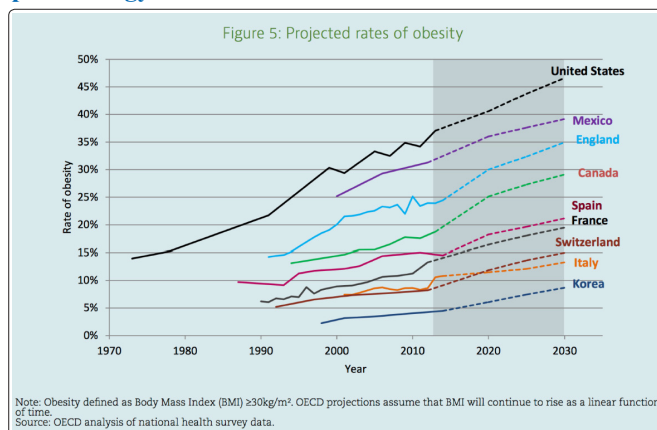
Obesity is a multi-factorial disorder, recognized as a major health problem by World Health Organization (WHO), Centers of Disease Control (CDC) and National Institute of Health (NIH). It increases the risk of several debilitating and deadly diseases hence decreasing the quantity and length of life. Body Mass Index (BMI) is the estimation of the body fat. As BMI increases, so does blood pressure, blood sugar, Low Density Lipoprotein (LDL) and cholesterol. These changes translate into the risk of heart strokes, CVD, diabetes mellitus and hypertension. Poor dietary intake, sedentary behavior, genetics, high demand of convenience and processed food at an early age can lead to a greater probability of developing metabolic and endocrinal syndrome, insulin resistance and future complication in pregnancy. According to a study at Harvard, worldwide rate of obesity has already doubled since 1980, affecting 200 million adults, under 3000 million women and 43 million children (since 2010). According to another study at Rand Institute, obesity is a higher risk factor for chronic diseases than living in poverty, smoking and drinking. Approximately 300,000 people die per annum in USA. Obesity and its association linked with chronic diseases harms virtually for every aspect of life and health. It isn't necessarily a permanent condition, an approach to healthy diet; exercise along with educating the individual the skill to make better choices can lead to weight loss and ultimately longer healthier and happier life.

Introduction to Obesity

- Accumulation of abnormal and excessive fat in organism.
- Obesity is a gateway to chronic diseases.
- Multitude of social and psychological adverse conditions.
- Increase in Basal Metabolic Index (BMI) increases the prevalence of obesity ultimately.



Epidemiology

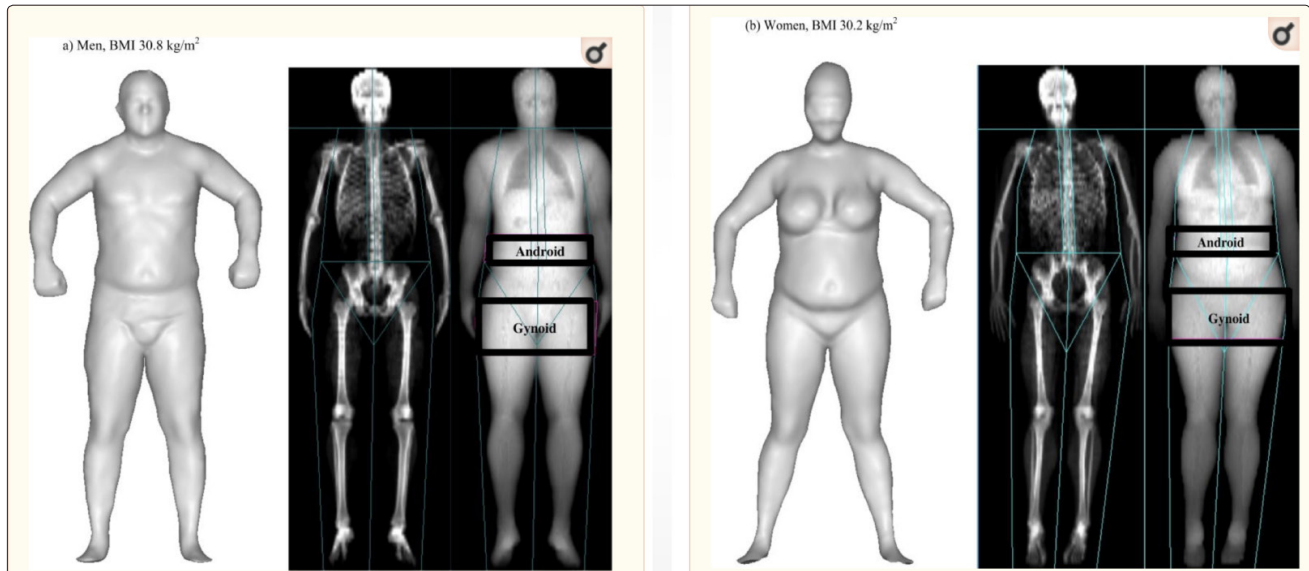


Classification of obesity

BMI	Classification
<18.5	underweight
18.5-24.9	normal weight
25.0-29.9	overweight
30.0-34.9	class I obesity
35.0-39.9	class II obesity
≥ 40.0	class III obesity

- BMI ≥ 35 is severe obesity
- BMI of ≥ 40 is morbid obesity
- BMI of ≥ 50 is super obese

Types of obesity



“Android: Fat accumulation around stomach, shoulder and internal organs, Common in men
Gynoid: Excess body fat around thighs, hips and buttocks.”

Symptoms

Dyspnea	Skin problems	Heartburn
Pain in joints	Increased appetite	Hormonal Imbalance
Depression	Gastrointestinal tract disturbed	

Etiology

Genetic	Socio economic factors	Lack of physical activity
Child obesity	Regional differences	Medications
Lifestyle	Endocrine disorders	

Complications

Diseases linked with obesity:

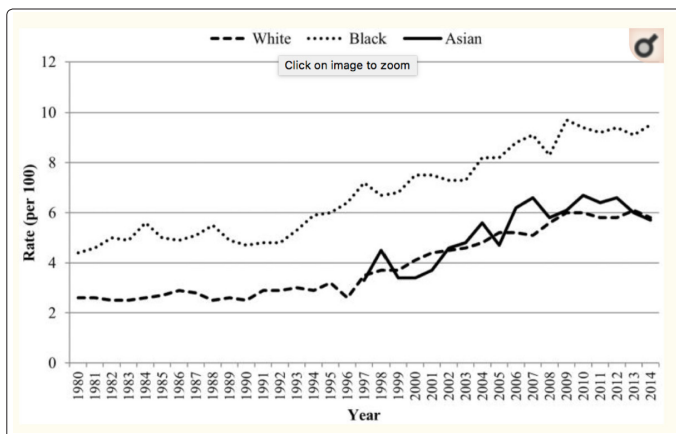
- Diabetes
- Cardio Vascular Diseases
- Gastrointestinal problems
- Respiratory
- Inflammation
- Renal
- Cancer
- Infertility
- Neurological
- Musculoskeletal
- Psychological

Diabetes

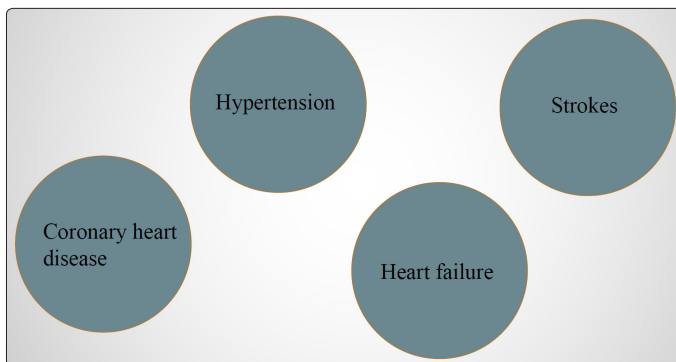
- It is a chronic disorder that alters carbohydrates, protein and fat metabolism.
- Insulin resistance leads to elevated fatty acids in the plasma, subsequently leading to elevated hepatic glucose production.
- Impaired glucose tolerance and/or impaired fasting glucose.

Epidemiology

- 12% people have diabetes in US, expected to rise by 21-33% by 2050.
- In the US, diabetes affects nearly 1 in 10 adults, with a majority (90%–95%) of the cases being type 2 diabetes.
- 85.2% of people with T2D are overweight or obese.



Cardio Vascular Diseases

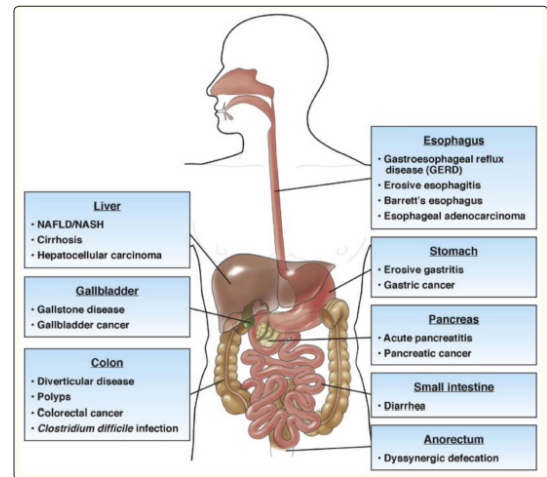


Epidemiology

- In males the prevalence of hypertension is 15% in those with BMI <25 and 42% if BMI is >30
- In women, the rate is 15% and 38%.
- According to WHO report 21 per cent of chronic heart diseases

are attributable to a BMI above 21.

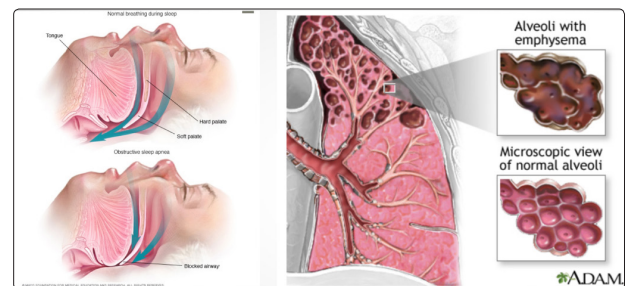
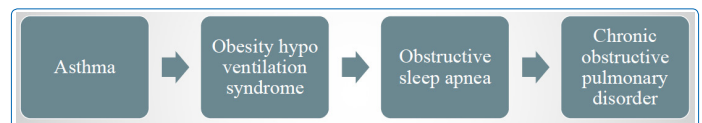
Gastrointestinal problem



Epidemiology

- 5-10% of the US population suffers from Irritable bowel syndrome.
- 60% of morbidly obese individuals undergoing gastric bypass surgery have gallbladder pathology.
- The relative risk of developing pancreatic cancer is about 20% greater in people with BMI > 30 compared to normal weight individuals.
- 13,420 men and women who had participated in the First National Health and Nutrition Examination Survey, demonstrated that the hazard ratio for colon cancer increased with BMI.

Respiratory



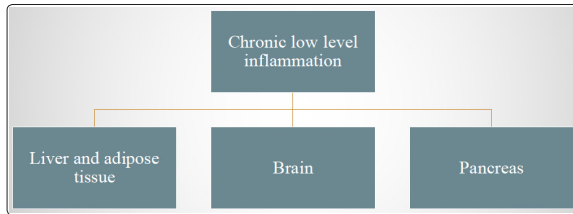
Obstructive sleep apnea

COPD

Epidemiology

- The prevalence of OSA is estimated to be ~25%, and as high as 45% in obese subjects.
- In 2010, the obesity rate among adults with current asthma (38.8%) was significantly higher than the rate among adults without current asthma (26.8%).
- Estimates of obesity in patients with COPD in Canada is 25%, South America is 23%, Dutch population 18% and northern California 54%.
- Obesity hypoventilation syndrome is more prevalent in US (25%) than France (23%) and Italy (17%).

Inflammation



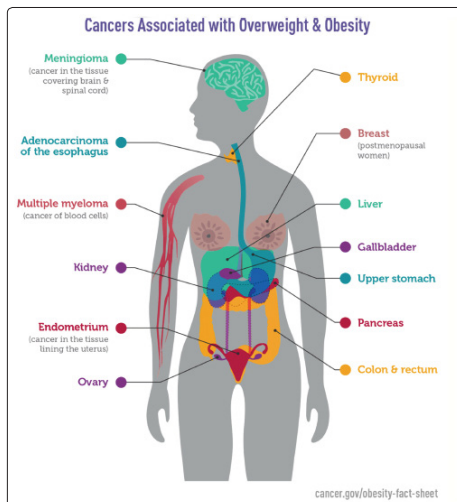
Renal

- Overweight and obesity are risk factors for hypertension, diabetes mellitus and other conditions associated with renal impairment function.
- Alterations that promote proteinuria and glomerulosclerosis.
- Obesity in CKD is independently associated with hyperparathyroidism.
- Higher BMI appears associated with the presence and development of low estimated glomerular filtration rate (GFR), with more rapid loss over time, and with the incidence of End Stage Renal Disease (ESRD).

Epidemiology

- The prevalence of obesity among US patients awaiting a kidney transplant had increased from 11.6% to 25.1%.
- A recent study of 15,667 elderly kidney transplant recipients showed that obesity was associated with 19% higher risk of graft failure.

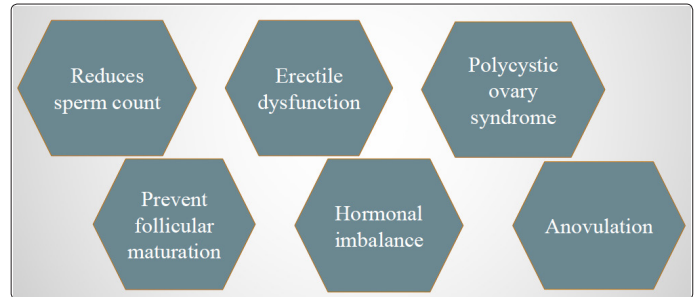
Cancer



Epidemiology

- Overweight and obese individuals have 10%-20% increase in the risk of developing multiple myeloma.
- Overweight and obesity causes 6% of cancer cases in the UK.
- 23% of liver cancer cases in the UK are caused by overweight and obesity.
- 8% of breast cancer cases and 11% of bowel cancer cases in the UK are caused by overweight and obesity.

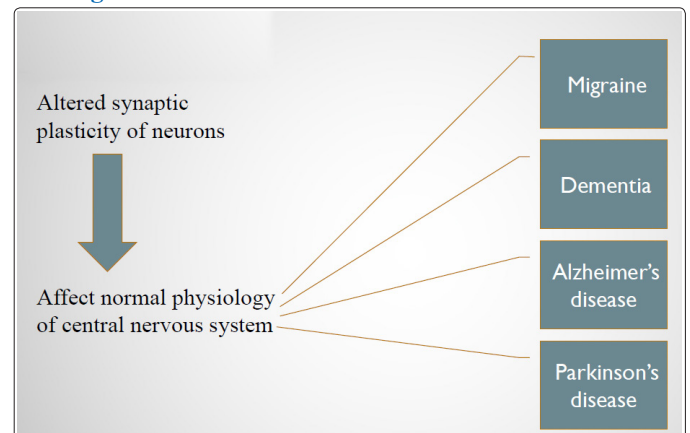
Infertility



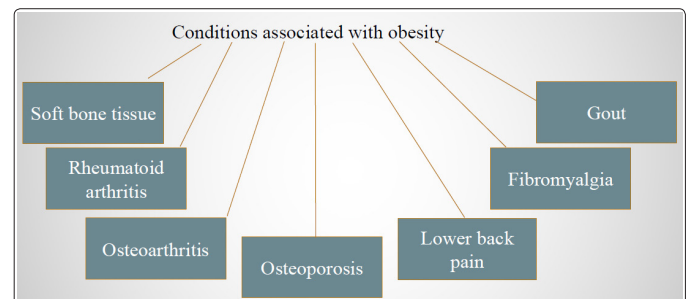
Epidemiology

- Studies have indicated that 30-47% of obese women have irregular menstrual cycle.
- The incidence of oligospermia and azospermia increases as BMI increases, from 5.3% and 4.5% in normal weight men, to 9.5% and 8.9% in overweight men, and to 15.6% and 13.3% in obese men.

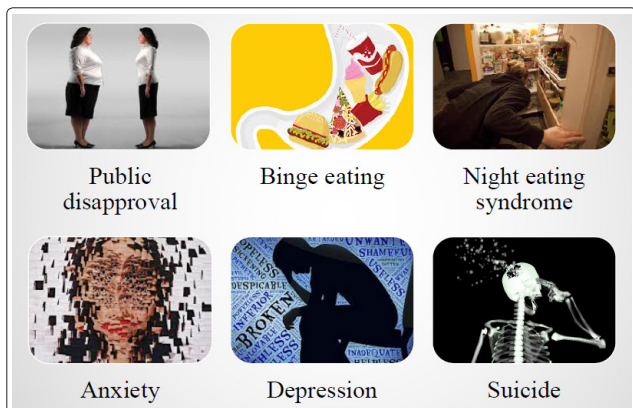
Neurological



Musculoskeletal



Psychological



Treatment

- I. Medical nutrient Therapy
 - **Garlic**
 - I. Anti-hyperlipidemia and anti- cancer effect
 - II. Anti- thrombotic and anti-hypertensive effect
 - **Cinnamon**
 - I. Loaded with anti-oxidants
 - II. Anti-inflammatory properties
 - III. Decreases the risk of neurodegenerative disease
 - **Raisins**
 - I. Diabetes prevention
 - II. Act as a probiotic
 - III. Helps in sexual dysfunction
 - IV. Reduces stroke risk
 - **Papaya**
 - I. Prevention of diabetes, cancer and stress.
 - II. Promotes cardiovascular health.
 - **Stevia**
 - I. Diabetic control and weight loss.
 - II. Prevents hypertension and cancer.
 - Fiber

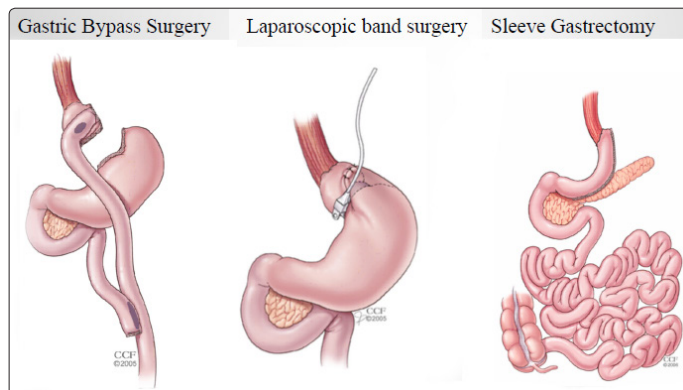
High-Fiber Fruit
Raspberries
Pear
Blueberries
Apple, with skin
Banana
Mango
Raisins
Dried plums

High-Fiber Vegetable
Peas, cooked
Potato, baked with skin
Corn, cooked
Sweet potato, baked with skin
Spinach, cooked
Broccoli, cooked
Celery, raw
Carrots, raw

High-Fiber Beans, Nuts, and Seeds
Lentils
Black Beans
Kidney Beans
Lima Beans
Hummus (made from chickpeas)
Almonds
Sunflower Seeds
Peanuts

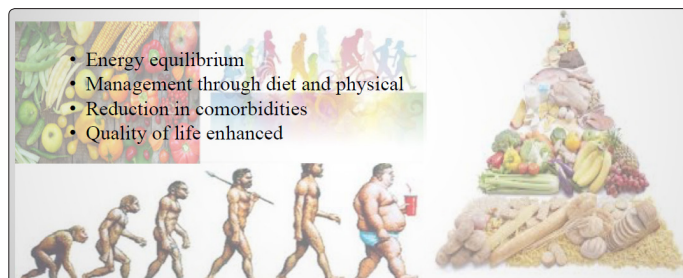
Whole Grain Food
Oatmeal (instant)
Whole wheat spaghetti (cooked)
Whole wheat bread
Raisin bran cereal
Whole wheat English Muffin
Popcorn, air-popped
Brown rice
Whole wheat pretzels

1. Regular physical activity.
2. Maintain appropriate calorie balance during each stage of life
3. Surgery is only considered when other weight management options have not been successful.



Conclusion

- Energy equilibrium
- Management through diet and physical
- Reduction in comorbidities
- Quality of life enhanced



What should we do as a community?

- Medical camps.
- Access to remote areas.
- Awareness campaign.
- Educational programs at all levels.

References

1. "10 Facts on Obesity." World Health Organization, World Health Organization, 16 Oct. 2017, www.who.int/features/factfiles/obesity/en/
2. Let's Eat for the Health of It, 2011. https://www.cnpp.usda.gov/sites/default/files/dietary_guidelines_for_americans/DG2010Brochure.%20pdf.
3. Obesity Update 2017, 2017. www.oecd.org/els/health-systems/Obesity-Update-2017.pdf.
4. Al-Goblan, Abdullah S (2014) Current Neurology and Neuroscience Reports., U.S. National Library of Medicine. www.ncbi.nlm.nih.gov/pmc/articles/PMC4259868/.
5. "Asthma and Obesity." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 9 Aug. 2013. www.cdc.gov/asthma/asthma_stats/asthma_obesity.htm.
6. "Bariatric Surgery Procedures – ASMBS." American Society for Metabolic and Bariatric Surgery, 18AD, asmbs.org/patients/bariatric-surgery-procedures.
7. Bhat, Z F, Morton JD, Mason S, Bekhit AEA, Bhat HF (2017) "Obesity and Neurological Disorders: Dietary Perspective of a Global Menace." Current Neurology and Neuroscience

- Reports., U.S. National Library of Medicine. www.ncbi.nlm.nih.gov/pubmed/29257910.
8. Bhupathiraju, Shilpa N, Frank B Hu (2016) "Epidemiology of Obesity and Diabetes and Their Cardiovascular Complication." *Current Neurology and Neuroscience Reports.*, U.S. National Library of Medicine. www.ncbi.nlm.nih.gov/pmc/articles/PMC4887150/.
 9. "Cancers Associated with Overweight & Obesity Infographic." National Cancer Institute, 18AD, www.cancer.gov/about-cancer/causes-prevention/risk/obesity/overweight-cancersinfographic.
 10. "Chronic Obstructive Pulmonary Disease: MedlinePlus Medical Encyclopedia." MedlinePlus, U.S. National Library of Medicine, 18AD, medlineplus.gov/ency/article/000091.htm.
 11. Dziony, Emanuela, Elżbieta Poniewierka (2017) "Nutritional Causes of Obesity among Young Women." *Health Psychology Report*, Termedia. <https://www.termedia.pl/Nutritional-causes-of-obesity-among-young-women,72,30532,0,1.html>
 12. Jane J Lee, Jeanne H. Freeland-Graves, M. Reese Pepper, Philip R Stanforth, Bugao Xu (2015) "Prediction of Android and Gynoid Body Adiposity via a Three- Dimensional Stereovision Body Imaging System and Dual-Energy x-Ray Absorptiometry." *Current Neurology and Neuroscience Reports.*, U.S. National Library of Medicine www.ncbi.nlm.nih.gov/pmc/articles/PMC5690984/.
 13. "Obesity and Overweight: What You Should Know." The National Kidney Foundation, 10 July 2018, www.kidney.org/atoz/content/obesewyska.
 14. Obesity." The Nutrition Source, 18 June 2018. www.hsph.harvard.edu/magazine/magazine_article/obesity/.
 15. "Obstructive Sleep Apnea." Mayo Clinic, Mayo Foundation for Medical Education and Research, 6 Mar. 2018, www.mayoclinic.org/diseasesconditions/obstructive-sleep-apnea/symptoms-causes/syc-20352090.
 16. "Overweight & Obesity." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 5 Mar. 2018, www.cdc.gov/obesity/adult/causes.html.
 17. Weight Gain from Early to Middle Adulthood May Increase Risk of Major Chronic Diseases and Mortality." The Nutrition Source, 22 June 2018. www.hsph.harvard.edu/news/press-releases/weight-gain-early-middleadulthood-chronic-diseases-mortality.

Copyright: ©2018 Fatima Irfan. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.