introduction and aim of the work

Obesity is an increase of body fatty tissue mass. In a practical setting it is measured by Body Mass Index (BMI). BMI is a simple and widely used method for estimating body fat mass. It was developed in the 19th century by the Belgian statistician and anthropometrist Adolphe Quetelet. BMI is an accurate reflection of body fat percentage in the majority of the adult population, but is less accurate in situations that affect body composition such as in body builders and pregnancy *(Calle et al., 2003)*.

BMI is calculated by dividing the subject's *weight in Kilograms* by the *square of his height* in meters *(Sweeting, 2007).* The most commonly used definitions, established by the WHO in 1997 and published in 2000, provide the following values:

- A BMI less than 18.5 is *Underweight*
- A BMI of 18.5–24.9 is *Normal Weight*
- A BMI of 25.0–29.9 is *Overweight*
- A BMI of 30.0–34.9 is *Class I Obesity*
- A BMI of 35.0-39.9 is *Class II Obesity*
- A BMI of > 40.0 is *Class III Obesity*

BMI of 35.0 or higher in the presence of at least one other significant comorbidity is also classified by some bodies as *Morbid Obesity (NICE Guidelines, 2007)*

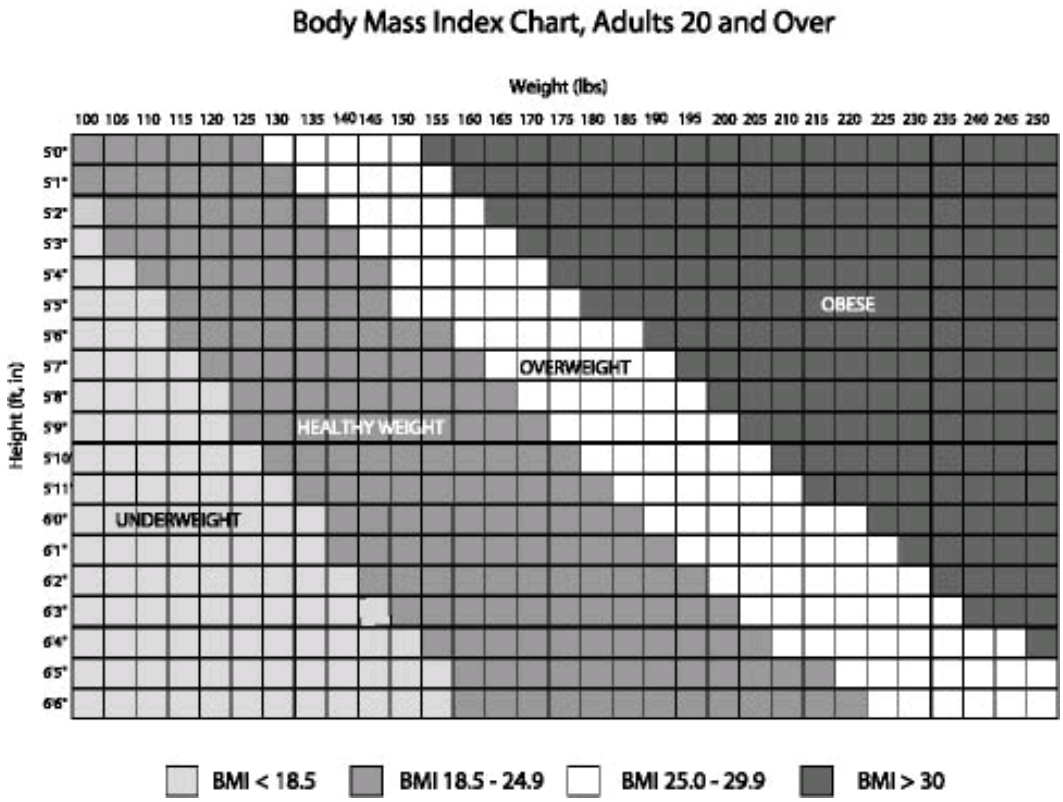

Figure 1: BMI chart *(Flegal et.al, 2002)*

According to World Health Organization estimates 1.1 billion people were overweight or obese worldwide in the year 2000 with the prevalence rapidly increasing. Compared with people in the healthy weight category, those who are overweight or obese are at greater risk for many diseases, including diabetes, high blood pressure, cardiovascular diseases, stroke, and certain cancers. Obesity lowers life expectancy *(WHO report, 2000)*.

Cancer is a condition characterized by abnormal cell growth. If the cells are allowed to continue growing and spreading unstopped, the endless replication leads to death. Currently, the average five-year rate of survival is above sixty percent. Of all types, the greatest killer is lung cancer *(Polendak, 2003)*.

Medical research has determined that obesity increases the possibility of developing certain types of cancer by 25% including cancers of breast, colon, endometrium, esophagus, kidney and prostate. In part, these associations with cancer risk may be explained by alterations in the metabolism of endogenous hormones, including sex steroids, insulin, and insulin-like growth factors; which can lead to distortion of the normal balance between cell proliferation, differentiation, and apoptosis *(Haslam & James, 2005)*.

In 2002, about 41,000 new cases of cancer in the United States were estimated to be due to obesity. This means that about 3.2 percent of all new cancers are linked to obesity *(Polednak, 2003)*. A recent report estimated that, in the United States, 14 percent of

deaths from cancer in men and 20 percent of deaths in women were due to overweight and obesity *(Calle et al., 2003)*.

The aim of this essay is to shed light on the relationship between obesity and cancer, regarding its incidence, types of cancer and the pathogenetic mechanisms.