Body mass index

The body mass index (BMI), or Quetelet index, is a measure of relative size based on the mass and height of an individual.

see Body mass index in glioblastoma.

The index was devised by Adolphe Quetelet during the course of developing what he called "social physics", between 1830 and 1850.

The BMI for a person is defined as their body mass divided by the square of their height—with the value universally being given in units of kg/m2. So if the weight is in kilograms and the height in metres, the result is immediate, if pounds and inches are used, a conversion factor of 703 (kg/m2)/(lb/in2) must be applied.

The BMI of an individual may also be determined using a table or chart which displays BMI as a function of mass and height using contour lines or colors for different BMI categories, and may use two different units of measurement.

There are a wide variety of contexts where the BMI of an individual can be used as a simple method to assess how much the recorded body weight departs from what is healthy or desirable for a person of that height. There is, however, some debate about which values on the BMI scale the thresholds for 'underweight', 'overweight' and 'obese' should be set.

see obesity.

Kamal et al. conducted a meta-analysis to address the outcomes in cancer patients after oncologic surgery during the COVID-19 pandemic. The primary endpoint was the COVID-19-related mortality rate. Higher body mass index was significantly and negatively associated with higher all-cause mortality and in-hospital COVID-19 infection rates. Male sex, preoperative respiratory disease, and smoking history were positively and significantly associated with increased all-cause mortality rates. Furthermore, male sex was positively and significantly associated with the COVID-19 infection rate ¹⁾.

Although elevated BMI has been shown to have a deleterious impact on outcomes after lumbar spine surgery, limited evidence is available regarding its impact in DCM. METHODS: Analyses were completed using a combined North American/International prospective surgical DCM dataset from 26 participating centers. Outcome measures included Neck Disability Index (NDI), modified Japanese Orthopedic Association (mJOA) score, and Short Form- 36 (SF-36) scores at 1 year postoperatively. Bivariate and multivariable statistics were used to model the relationship between preoperative BMI, as both a continuous and categorical variable with these outcomes. RESULTS: Of 757 patients, mean BMI was 27.3 (\pm 5.7) with 17 patients (3.5%) underweight, 271 patients (35.8%) normal weight, 275 patients (36.3%) overweight, and 194 patients (25.7%) obese. Controlling for preoperative mJOA, NDI, smoking status, age, and sex, elevated BMI was associated with increased neck disability at 1 year (P<0.01). On average, NDI scores were 4.5 points higher (95% confidence interval, CI: 1.6-7.6) for overweight patients and 5.7 points higher (95% CI: 2.6-8.9) for obese patients compared with individuals of normal weight. Obese patients had 0.5 times odds (odds ratio, OR=0.5, 95% CI: 0.3-0.8,

P<0.01) of showing improvement equal to the minimal clinically important difference of NDI compared with their normal weight counterparts. Although there were strong trends towards reduced SF-36 mental component scores and physical component scores with elevated BMI, no association was found between BMI and 1-year mJOA.

Increased BMI, particularly obesity, was associated with increased postoperative disability. This represents a potentially modifiable risk factor which clinicians can target to optimize postoperative outcomes ²).

BMI is a risk factor for adjacent segment disease in patients undergoing lumbar fusion for degenerative lumbar spine disorder. Because BMI is clinically objective and modifiable, controlling body weight before or after surgery may provide opportunities to reduce the rate of adjacent segment disease and to improve the outcome of fusion surgery ³⁾.

1)

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