Severe Obesity Shortens the Human Life Span

Preventing further weight gain can add years to your life, if you are becoming overweight or obese.

BY ROBERT FINN

Severe obesity is associated with a loss of 8-10 years of life, and moderate obesity is associated with 2-4 lost years, according to a very large study.

"Excess weight shortens human life span. In countries like Britain and America, weighing a third more than the optimum shortens life span by about 3 years. For most people, a third more than the optimum means carrying 20-30 kg [50-60 pounds] of excess weight. If you are becoming overweight or obese, avoiding further weight gain could well add years to your life," Dr. Gary Whitlock of the University of Oxford (England), study investigator, said in a statement.

The analysis combined prospectively collected data from 894,576 adults who participated in 57 separate studies, mostly in Europe, Israel, the United States, and Australia. Participants were 46 years old on average when recruited, and were followed for an average of 13 years. The investigators discarded the first 5 years of mortality data to limit the effects of preexisting disease on the analysis. Not counting that 5-year period, the participants were followed for 6.5 million person-years (Lancet 2009 March 18 [doi:10.1016/S0140-6736(09)60318-4]).

The mortality rate was lowest in participants with a body mass index between 22.5 and 25 kg/m^2. Above 25 kg/m^2, each additional 5 kg/m^2 resulted in a 29% increase in overall mortality.

Low BMI also was associated with excess mortality. Men with a BMI between 15 and 17.5 kg/m^2 had an annual mortality rate of 26.4 per 1,000 compared with 14.5 per 1,000 among those with BMIs between 22.5 and 25 kg/m^2. In women, the annual mortality was 15.1 per 1,000 in the lowest BMI group compared with 8.9 per 1,000 among those with BMIs between 22.5 and 25 kg/m^2. The investigators attributed much of this excess mortality to the effects of cigarette smoking.

Higher BMI was associated with higher rates of virtually all causes of mortality including ischemic heart disease, stroke, other vascular disease, diabetes, kidney disease, liver disease, respiratory disease, and neoplastic disease.

The association between BMI and cancer was much weaker than that between BMI and vascular disease, however. Each 5-kg/m^2 increase in BMI was associated with only 10% higher neoplastic mortality compared with 40% higher vascular mortality. There were statistically significant associations between BMI and cancers of the kidney, breast, endometrium, prostate, and large intestine.

The investigators emphasized that prevention of excess weight gain would likely be more effective than dieting to lose weight.

They wrote, "In adult life, it may be easier to avoid substantial weight gain than to lose that weight once it has been gained. By avoiding a further increase from 28 kg/m^2 to 32 kg/m^2, a typical person in early middle age would gain about 2 years of life expectancy. Alternatively, by avoiding an increase from 24 kg/m^2 to 32 kg/m^2 (i.e., to a third above the apparent optimum), a young adult would on average again about 3 extra years of life."

The many coauthors of this study were part of the Prospective Studies Collaboration of the Clinical Trial Service Unit of the University of Oxford. The collaboration was supported by the UK Medical Research Council, the British Heart Foundation, Cancer Research UK, the EU BIOMED Program, and the National Institute on Aging. ■

Abdominal Obesity Strongly Linked to Lung Function

Abdominal obesity may be a key determinant in the link between metabolic syndrome and impaired lung function, according to an analysis of the health information for 121,965 men and women examined at a large French medical center during 1999-2006.

In that study, Dr. Nathalie Leone of the University of Paris 7-Denis Diderot in France and colleagues observed a positive, independent relationship between impaired lung function and metabolic syndrome in both sexes (Am. J. Respir. Crit. Care Med. 2009;179:509-16).

The investigators evaluated the risk for impaired lung function according to metabolic syndrome traits using a logistic regression model adjusted for age, sex, education, smoking status, alcohol, BMI, physical activity, and cardiovascular disease history.

Impaired lung function was defined as a forced expiratory volume in 1 second (FEV_1) or forced vital capacity (FVC) less than the lower limit of normal. In the logistic regression model, impaired FEV_1 and FVC were independently linked to metabolic syndrome, with odds ratios of 1.28 and 1.41, respectively. Similar results were observed in women and men, the authors reported.

Metabolic syndrome variables identified three factors independently associated with impaired lung function: low HDL cholesterol level/high triglyceride level, high fasting glucose level/high blood pressure, and waist circumference greater than 35 inches for women and greater than 40 inches for men.

Abdominal obesity showed the strongest association with lung function. Given that abdominal obesity has been associated in recent studies with a higher risk of respiratory death regardless of BMI, "our study raises potential concerns about how the possible impact of the increase in [waist circumference] reported in the United States and, to a lesser extent, in France on future adverse health outcomes should be considered when assigning resources in respiratory care," wrote the authors, who reported having no relevant financial conflicts of interest.

—Diana Mahoney

Weight Loss Similar Across Diet Schemes

BY MARY ANN MOON

Weight-loss diets emphasizing different proportions of fat, protein, and carbohydrate content were found to be equally successful in a population-based study.

However, the author of an editorial commenting on this report argued that the dietary goals were only partly achieved.

In a direct comparison of four different diets, all study groups showed similar weight losses, decreases in waist circumference, and improvements in cardiovascular risk profiles. Satiety, hunger, satisfaction with the diet, and attendance at group support sessions also were similar across all four groups, regardless of the percentages of fat, protein, and carbohydrates the diets allowed.

"These divergent results suggest that any type of diet, when taught for the purpose of weight loss with enthusiasm and persistence, can be effective," said Dr. Frank M. Sacks of Harvard School of Public Health, Boston, and his associates.

They assessed the diets of 811 subjects aged 30-70 years who had a BMI of 25-40 kg/m^2 and were highly motivated to lose weight. The subjects were taught their diets, given daily meal plans and lists of carbohydrate-rich foods with a low glycemic index, and supported with individual and group counseling. A total of 645 of them (80%) completed the 2-year study.

Approximately one-third of the participants lost at least 5% of their initial body weight. Weight reductions differed by less than 0.5 kg across the four diet groups, and decreases in waist circumference differed by less than 0.5 cm. Cardiovascular risk factors such as cholesterol levels and blood pressure improved to the same degree in all groups.

"In conclusion, diets that are successful in causing weight loss can emphasize a range of fat, protein, and carbohydrate compositions." Such diets can "be tailored to individual patients on the basis of their personal and cultural preferences and may therefore have the best chance for long-term success," the investigators wrote (N. Engl. J. Med. 2009;360:859-73).

None of the diets in this study was particularly effective in the long term, Martijn B. Katan, Ph.D., of VU University, Amsterdam, said in an editorial comment accompanying this report. Weight loss averaged 6 kg at 6 months, but thereafter subjects tended to regain weight so that final losses averaged only 3-4 kg at 2 years. Even these relatively small losses might not have been sustained if the trial had continued, Dr. Katan said (N. Engl. J. Med. 2009;360:923-5).

"The participants were highly educated, enthusiastic, and carefully selected. They were offered 59 group and 13 individual training sessions [with expert professionals] over the course of 2 years. Nonetheless, their body mass index … averaged 31-32 and was moving up again" as the trial ended, he said.

Moreover, the macronutrient goals for each of the four diets were not reached. Protein intake was intended to differ among the four groups by 10% of energy, but it differed by only 1%-2%. Similarly, carbohydrate intake was supposed to differ by 30% among the groups, but both extremely low and extremely high carbohydrate intakes proved difficult to achieve, so the actual difference turned out to be only 6% of energy, Dr. Katan said.

The study investigators said that attendance at group behavioral counseling sessions "had a strong association with weight loss" and that the effect was seen across diet groups. Participants who attended two-thirds of their sessions during the 2 years lost about 9 kg, and regain after 6-12 months was about 20% of that seen in previous studies, the investigators reported. This suggests that "behavioral factors rather than micronutrient metabolism" have a greater influence on weight loss.

The editorial noted that it is difficult to quantify behavior as a factor in weight loss. "Cognition and feelings have a huge impact" on food consumption, Dr. Katan said. "Participants may eat less not because of the protein or carbohydrate content of a diet but because of the diet's reputation or novelty or because of the taste of particular foods in the diet." Studies that can determine the effects of macronutrients on food intake and weight loss have used foods that necessarily look and taste the same such as "porridges (similar to oatmeal) and standardized snacks," Dr. Katan explained. That was not done in the current study. "Few subjects would be willing to eat those foods for the several years that would be needed to examine long-term effects," he wrote.

No relevant potential conflicts of interest were reported by Dr. Sacks or Dr. Katan. ■