BMI Extremes Tied to Mortality in Diabetes

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FROM THE ANNUAL MEETING OF THE AMERICAN DIABETES ASSOCIATION

ORLANDO — The adage "Moderation in all things" may directly apply to longevity for people with diabetes, according to a national epidemiologic study from Scotland.

The study of more than 150,000 Scots with type 2 diabetes found that those with extremely high—and extremely low—body mass index were up to twice as likely to die during follow-up as were those with more moderate BMIs.

The study cannot draw any causal links between a moderate BMI and a decrease in mortality, Dr. Jeremy Walker said at the meeting. But it does raise intriguing questions about maintaining a healthy body weight that avoids becoming either over- or underweight.

"Elevated mortality in higher BMI ranges carries urgent and widely recognized public health implications," said Dr. Walker of the University of Edinburgh Centre for Population Health Sciences. "Elevated BMI is associated with adverse effects on blood pressure, lipid levels, cardiovascular disease risk, glucose metabolism, and cancer."

While plausible explanations for the relationship between high BMI and death have long existed, explaining the association of low BMI with death is more problematic, Dr. Walker said in an interview. "Low BMI may actually be a consequence of preexisting illness (as is the case in many cancers and much respiratory disease) rather than a cause."

However, he said, few investigators have drawn attention to the relationship between mortality and the lower range of BMI. One major study, the Prospective Studies Collaboration (PSC), observed a significant relationship between low-normal BMI and all-cause mortality.

The PSC examined the relation between all-cause mortality and baseline BMI in almost 1 million subjects who had been included in 57 prospective studies and followed for a mean of 8 years. The investigators found a very strong U-shaped mortality curve linked with BMI. For both genders, the lowest mortality occurred at 22.5-25 kg/m^2. Each 5 kg/m^2 higher BMI was associated with an increase in overall mortality of about 30%. But subjects with lower BMIs were also at an increased risk of death (Lancet 2009;373:1083-96).

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DR. WALKER

Dr. Walker and his coworkers examined the relationship between mortality and BMI in 150,396 patients with type 2 diabetes in the Scottish Care Information Diabetes Collaboration. An initial recording of patients' BMI was linked to national mortality records through 2007, with a mean follow-up of 6 years. The analysis was adjusted for age and socioeconomic status.

There were 81,004 males in the cohort, 13,059 of whom had died by 2007. There were 69,392 females, 11,179 of whom had died by the end of the study.

The mortality and BMI data showed a strong U-shaped curve, with the lowest mortality in the BMI range of 25 to less than 35. For men with a BMI of 15 to less than 20, the risk of death was almost double that of men in the 25-35 range. The risk of death was 1.5 times increased for men with a BMI of 20 to less than 22.5.

Elevation of risk also was observed for men with a BMI of above 35 to 45 kg/m^2 or higher, though the increase was smaller than at the low end of the BMI range.

Women faced similar risks. Women with the lowest BMI of 15 to less than 20 kg/m^2 had almost twice the risk of death as those in the moderate range. Women with the higher BMIs (at least 40) were 1.5 times as likely to die.

The study was sponsored by the Scottish Health Informatics Programme, a collaboration funded by the Wellcome Trust. Dr. Walker had no financial declarations regarding the study. ■