EDITORIALS

The Missing Link — Lose Weight, Live Longer

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In this issue of the *Journal*, two articles — by Sjöström et al.[1] and Adams et al.[2] — may provide the missing link between intentional weight loss and lives saved for obese patients. For the past two decades, we have been living through an epidemic of obesity.[3,4] The prevalence of obesity has more than doubled in adults and has risen by a factor of more than 3 in children. This escalation in obesity is a time bomb for the future risk of diabetes and other illnesses and for the attendant costs.[5]

With the increasing use of surgery to treat massively overweight patients in the 1980s, the National Institutes of Health (NIH) convened a Consensus Conference, which proposed that bariatric surgery should be considered for persons with a body-mass index (BMI, the weight in kilograms divided by the square of the height in meters) of more than 40 or of more than 35 in patients with coexisting illnesses.[6] The conference group also concluded that bariatric surgery was appropriate only if other forms of treatment had failed. These opinions have been the primary guidelines for surgical intervention since they were published in 1991.[6] The results of the studies by Sjöström et al. and Adams et al. may be taken to suggest that these criteria need to be reexamined.

The National Heart, Lung, and Blood Institute[3] and the World Health Organization[4] document that weight loss reduces many of the risk factors for increased death and disease that so often accompany obesity. After weight loss, incident type 2 diabetes in persons with prediabetic conditions is reduced, hypertension and dyslipidemia can be treated or controlled more easily, the quantity of visceral fat decreases, and the quality of life improves. What has been missing from the equation is a demonstration that improvement in these risk factors translates into a longer life. Although we know that being overweight shortens life expectancy, some epidemiologic studies have suggested that weight loss may even worsen life expectancy. However, these studies are confounded by an inability to determine whether weight loss was intentional or unintentional — and we have known for more than 2500 years that unintentional weight loss is often ominous.

Therefore, the studies by Sjöström et al. and Adams et al. showing that weight loss lowers the rate of death are most welcome. Two earlier studies by Flum and Dellinger[7] and by Christou et al.[8] using cross-sectional methods suggested that bariatric surgery improved long-term survival. Sjöström and Adams and their colleagues address this issue differently. Sjöström et al. conducted a prospective, controlled study of bariatric surgery, called the Swedish Obese Subjects (SOS) study, in which overweight patients wishing surgery were matched with equally obese patients not desiring surgery (Table 1). Men with a BMI of 34 or more and women with BMI of 38 or more were eligible, although these values were below those eventually recommended by guidelines of the NIH's Consensus Conference. At 10 years, weight losses ranged from 14 to 25% among subjects who had undergone one of three surgical procedures, as compared with roughly 2% among control subjects. In the surgery group, there was a significant reduction in the adjusted hazard ratio for death (29%) after an average follow-up of 10.9 years, with a 99.9% ascertainment rate.

Adams et al. conducted a retrospective cohort study with controls obtained from driver's license records that were matched to patients who had

undergone gastric-bypass surgery. In this study, deaths from all causes were reduced by 40%, from diabetes by 92%, from coronary artery disease by 56%, and from cancer by 60%. Surprisingly, deaths in the first year were essentially the same in the surgery group and the control group, a finding that contrasts with that of Sjöström et al., who reported that early deaths (defined as occurring within 90 days after surgery) were higher in the surgery group (Table 1). This difference needs further exploration. The reduction of mortality from diabetes and cancer are particularly noteworthy.

Several caveats are needed. During the period in which these two studies were carried out, laparoscopic techniques largely replaced open operative techniques, allowing for a more rapid postoperative recovery, less surgical stress, and reduced mortality. Thus, future death rates associated with bariatric surgery should be lower than those reported by either Sjöström et al. or Adams et al. The lowest surgical mortality is seen among surgeons who have performed more than 50 operations and preferably more than 100 operations. This would suggest that the centers doing these procedures should provide optimal training and maintain health care facilities specifically for overweight patients.

As noted above, obesity is a strong predictor for the risk of diabetes. Weight loss in patients with prediabetic conditions will delay or prevent the development of diabetes.[9] A clinical trial involving patients with diabetes, called Look AHEAD (Action for Health in Diabetes; ClinicalTrials.gov number, NCT00017953), is testing whether weight loss by nonsurgical means can reduce mortality.[10] We now have data to show that bariatric surgery reduces the risk of diabetes. In a 2004 study, Sjöström et al.[11] reported a graded reduction in the incidence of diabetes after bariatric surgery. In patients who lost more than 12% of their body weight, diabetes did not develop during a 2-year period. Pories et al.[12] suggested that bariatric surgery may be one of the best procedures for treating type 2 diabetes. A recent study by O'Brien et al.[13] showed that weight loss after the laparoscopic insertion of an inflatable gastric band was more durable than that after nonsurgical treatment and that the rate of diabetes was reduced. However, the patients in that study had BMIs ranging from 30.0 to 34.9, which is below the NIH's guidelines.[6]

Table 1. Comparison of Data from Two Studies on Mortality Associated with Bariatric Surgery.*

Variable	Sjöström et al.		Adams et al.	
	Surgery Group	Control Group	Surgery Group	Control Group
Mean follow-up (yr)	10.9		7.1	
No. of subjects	2010	2037	7925	7925
Female sex (%)	82	82	84	84
Mean age (yr)	46.1	47.4	39.5	39.3
Mean body-mass index	41.8	40.9	45.3	46.7
Deaths				
Total no.	101	129	213	321
Early occurrence (%)†	0.25	0.10	0.53	0.52

* Data are from Sjöström et al.[1] (a prospective, controlled study) and Adams et al.[2] (a retrospective, matched-cohort study).
† In the study by Sjöström et al., early death was defined as occurring within the first 90 days after surgery. In the study by Adams et al., the period was 1 year.

Has the time come to reconsider BMI guidelines for bariatric surgery? In addition to the improvement in the risk of diabetes, the reduction in deaths from cancer[2] may also argue in this direction. Sjöström et al. and Adams et al. show that weight loss saves lives in obese patients. Thus, the question as to whether intentional weight loss improves life span has been answered, and the answer appears to be a resounding yes.

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Sex and Aging

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Human beings are living longer, women more so than men. Among people 85 years of age and older, there are 4 men for every 10 women.[1] What happens to sexuality in older age?

In this issue of the *Journal*, Lindau et al.[2] report the results of a community-based survey assessing sexual activity and problems among 3005 men and women 57 to 85 years of age. Among participants with a spousal or other intimate relationship, the proportion who reported being sexually active decreased steadily across the age groups and was uniformly lower among women; in the subgroup of respondents who were 75 to 85 years of age, 38.5% of men and 16.7% of women reported sexual activity with a partner in the previous 12 months. With increasing age, women were also substantially less likely than men to be involved in an intimate relationship. Among both men and women who were sexually active, approximately half reported at least one bothersome sexual problem. The presence of chronic medical conditions was associated with reduced sexual activity and an increased frequency of sexual problems among both men and women, although it was not a sufficient explanation for the age-related decreases in sexual activity.

These findings are consistent with those of earlier studies[3-5] showing decreases in sexual activity with increasing age, particularly in women. The present report has the advantages of having oversampled the oldest age group (persons who were 75 to 84 years of age at the time of screening) and having a relatively high survey response rate of 75%. However, it provides little information about older adults who are sexually inactive. Among these persons, 48% of respondents as compared with only 5% of respondents who were sexually active considered sex as being "not at all important." Previous research has shown that older women are more likely than older men to lose interest in sex if they are not in a relationship.[4] Unfortunately, the present study did not assess the proportion of respondents in a relationship who had become sexually inactive because of sexual problems, whether men or women had these sexual problems, and how the respondents felt about their relationship.

Most previous studies of the effect of aging on sexuality have involved either men or women, focusing on different factors in each case. Research in men has shown an inverse linear relationship between age and sexuality, even after adjustment for relevant age-related diseases. However, men differ considerably in terms of how quickly they age in this respect. In the Baltimore Longitudinal Aging Study in the 1970s, men who reported the highest frequency of sexual activity when they were younger had the slowest decline in sexual activity as they got older.[6] This finding has been virtually ignored in more recent research, in which the principal focus has been on hormonal and vascular factors.

Testosterone acts on the male brain to promote sexual arousal and desire. With increasing age, there are varying degrees of reduction in both free testosterone[7] and the number, and possibly responsiveness, of neurons in relevant areas of the brain such as the locus ceruleus, the brainstem center for testosterone-dependent arousal mechanisms. These changes contribute to the age-related decreases in sexual interest and, to some extent, erectile function.[8] There are age-related changes in various aspects of the vascu-