

Low-Fat Diets and Weight Change

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THE ARTICLE BY HOWARD AND COLLEAGUES¹ IN THIS issue of *JAMA*, which reports on the largest, most ambitious randomized dietary intervention trial conducted to date, has concluded that a low-fat diet program does not produce weight gain.¹ Despite the impressive features of this landmark study, the findings on long-term weight change are somewhat underwhelming.

The Women's Health Initiative (WHI),² of which the Dietary Modification Trial is one component,³ is one of the most outstanding achievements in clinical research history. The National Institutes of Health established the WHI in 1991 to address the most common causes of death, disability, and impaired quality of life in postmenopausal women. This multimillion-dollar, 15-year project, involving 161 808 women aged 50 through 79 years, was designed to address many of the inequities in women's health research and provide practical information to women and their physicians about hormone therapy, calcium/vitamin D supplements, dietary patterns, and prevention of heart disease, cancer, and osteoporosis.

The Dietary Modification Trial component evaluated the effect of a low-fat (target 20% fat), high-fruit/vegetable and grain diet on the prevention of breast and colorectal cancer and heart disease. Between 1993 and 1998, 48 835 postmenopausal women with a mean baseline age of 62.3 years, mean body mass index of 29.1, and a dietary fat intake of at least 32% of total calories (approximately the 50th percentile for fat intake) were randomly assigned to either the self-selected dietary control group or the low-fat dietary intervention, which aimed to change dietary patterns but did not encourage weight loss or caloric reduction (even though the vast majority of participants were obese or overweight). The trial did provide a unique opportunity to examine long-term effects of an ad libitum low-fat dietary pattern on body weight and the relationships between weight changes and specific changes in dietary components. The authors reported a 2.2-kg weight loss in the intervention group at year 1 (1.9 kg between groups) and a modest 0.4-kg difference between the groups at the 7.5-year mark ($P=.01$). They concluded that a low-fat eating pattern does not result in weight gain in postmenopausal women.¹

The article by Howard et al¹ is quick to focus attention on popular diets such as Atkins,⁴ the Zone,⁵ and Sugar Busters!⁶

whose authors have blamed the current obesity epidemic in large part on the low-fat (high-carbohydrate) eating pattern advocated by most authorities during much of the past quarter century.^{7,8} Does the recent study refute allegations that the low-fat dietary approach caused weight gain on a national scale? Perhaps it does to some extent. On the other hand, despite some successes,⁹⁻¹² overall the low-fat dietary approach has been a failure with the US public, which is in desperate need of effective obesity treatment and prevention strategies.

Did the WHI trial designers miss an opportunity to choose a better dietary intervention? Should they have encouraged specific caloric reductions in overweight and obese women? The intervention group reported a significant reduction in total fat intake of 9 percentage points (38.8% to 29.8% of calories as measured by food frequency questionnaire) with little or no change in the control group, suggesting a rather successful dietary intervention (although not close to the 20% target). But even though the women who reduced fat intake the most maintained some modest weight loss, absent an explicitly targeted caloric reduction this approach apparently had very little effect on mean body weight long term and presumably little effect on caloric intake. Given what was known about nutrition at study inception, the low-fat, high-fruit/vegetable and grain diet seems to have been a straightforward choice. The same cannot necessarily be said for the absent caloric restriction advice for overweight and obese participants. Weight loss was not a treatment goal, but perhaps it should have been.

Is it time to admit defeat? Is US society doomed to be one in which few individuals maintain normal body weight and one third of adults are obese?¹³ This study by Howard et al¹ does little to reassure skeptics, and some see no hope on the horizon. Many believe humankind does not have the self-control to counterbalance the forces that create a predictable wave of obesity in technologically advancing societies. Some believe national governments will never enact the bold policy changes that could make a dent in the obesity rates, such as substantially altering food advertising practices and creating economic incentives for vigorous adherence to lifestyle recommendations. Even modest steps such as limiting advertising of unhealthy food during children's television programming or placing small taxes on unhealthy foods are met

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with seemingly insurmountable resistance from the food industry and others.¹⁴ With a government and society that seemingly reject the pursuit of economic and other reforms that could make a real difference,¹⁵ the burden of obesity treatment and prevention continues to rest on the shoulders of “individual responsibility.”

Would tweaking the recommended dietary pattern produce the weight losses needed? Our research group found that diet type made little difference—the Atkins, Zone, Weight Watchers, and Ornish (low-fat vegetarian) diets, spanning the full spectrum of dietary patterns, each failed to produce satisfactory average adherence levels and weight losses at 1 year when compared in a head-to-head randomized trial.¹⁶ Each diet reduced caloric intake when followed, but most participants did not adhere well in the long term. While embracing a broad spectrum of eating strategies may facilitate optimal diet matching according to individual needs, there is little evidence in the medical literature that great progress on the obesity front can be made by tweaking dietary composition.^{17,18}

However, all hope is not lost. In our study,¹⁶ a high adherence level (leading to caloric restriction) produced satisfactory results (ie, weight loss and heart disease risk factor reduction) regardless of diet type. This is a general truth for virtually all aspects of medical treatment, especially for the most potent disease cures. Great results usually are predicated on great adherence levels. Modern medicine has much more work to do in the area of facilitating high long-term adherence levels. Focusing collective efforts on addressing this challenging aspect of obesity treatment and prevention would no doubt serve society well.

The rare glimpse of the potency of lifestyle modification provides reason for renewed optimism.^{19,20} Vigorous adherence to basic principles of caloric reduction and exercise can reverse obesity and most related medical problems. This occurs consistently and at a rate that corresponds directly to the magnitude of the caloric deficit resulting from the new dietary and exercise pattern. When dosed sufficiently, the results can be surprising and inspiring. Even moderate changes can make a big difference, especially for type 2 diabetes prevention.^{21,22}

Unfortunately, the public has become so entrenched in current obesity prevalence and treatment trends that many have come to view lifestyle modification as a mediocre means of preventing and reversing obesity, but this could not be further from the truth. Many have accepted the belief that living in today's society is incompatible with what is required to apply lifestyle changes, or even worse—that they barely work.²³ Inadequate lifestyle counseling by physicians might contribute to this perception.²⁴ However, most able-bodied persons who can find a way to overcome the monumental logistical and psychological barriers that prevent the full application of lifestyle change can reverse obesity within months. It seems simplistic, but a potential solution for the obesity crisis depends directly on finding a

means of properly dosing lifestyle change recommendations. The medical profession and society in general have underdosed this potent cure by a long shot.

Even though the WHI Dietary Modification Trial was not a weight-loss study, the modest weight-loss findings somehow still seem dissatisfying. Much more work needs to be done on the obesity front, including a concerted collective effort focused on developing reliable methods of facilitating high long-term adherence levels to substantial lifestyle efforts—specifically calorie-reduced eating patterns and much more exercise. That is something on which health advocates and popular diet proponents can agree.

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