Stanford researchers review efficacy and safety of low-carbohydrate diets

Stanford, Calif. - People who go on low-carbohydrate diets typically lose weight, but restricted caloric intake and longer diet duration are the biggest reasons why, according to a study from Stanford University Medical Center and collaborators at Yale University. The sweeping review of literature on this popular diet also found there are no short-term adverse effects of the diet, but also that there is insufficient evidence on the diet's long-term effects and impact on people over the age of 53.

"Low-carbohydrate diets have been extremely popular as of late, and the lay press has suggested they're a safe and effective means of weight loss," said lead author Dena Bravata, MD, social science research associate at Stanford's Center for Primary Care and Outcomes Research. "While these diets are effective in the short term, weight loss results from reduced calories, not carbohydrate restriction."

The study - the first review of its kind - appears in the April 9 issue of the Journal of the American Medical Association.

Books on low-carbohydrate/high-protein diets - such as the popular Atkins diet - have sold in the millions, and proponents say these diets cause rapid weight loss without adverse side effects. Numerous medical associations and physicians, however, have expressed concern that these diets are too high in fat and can lead to kidney and liver problems and other health risks.

Despite their popularity - and the concern of some in the medical community - Bravata said little evidence exists on the efficacy and safety of low-carbohydrate diets. Bravata and her colleagues, many of whom are practicing internists, said they wanted to know what to tell their patients about these diets. The aim of their study was to synthesize the current literature and evaluate any changes in weight and cholesterol, glucose, insulin and blood pressure levels.

Bravata and the researchers collected literature on low-carbohydrate diets published between 1966 and 2003. They reviewed a total of 107 diet studies, which involved 3,268 people from around the world. The studies were small and heterogeneous, with carbohydrate and caloric intake, diet duration and participant characteristics varying greatly. The studies did have two things in common: none of the studies had participants with a mean age over 53 and none of the randomized and controlled studies lasted longer than 90 days. "Information on older adults and long-term results are scarce at best, and this should be kept in mind when looking at our findings," noted Bravata.

The researchers' meta-analysis found that people on diets of 60 or fewer grams of carbohydrates a day (a threshold used in some of the popular low-carbohydrate diets) did lose weight. But the weight loss was associated with restriction of caloric intake and longer diet duration, not with reduced carbohydrate intake. It also found that the greatest weight loss occurred among those participants on diets with the highest baseline weight and lowest caloric content.

"The greatest predictors of weight loss appear to be caloric intake and diet duration," she said. "The findings suggest that if you want to lose weight, you should eat fewer calories and do so over a long time period."

The researchers found no significant adverse effects on cholesterol, glucose, insulin and blood-pressure levels among participants on the diets. But, Bravata stressed, the adverse effects may not have shown up within the short period of the studies. She also said losing weight typically leads to an improvement in some of these levels, so this could have had an impact on the numbers.

While Bravata is pleased to be able to provide her patients with the most current evidence on these diets, she and the researchers concluded that there is insufficient evidence overall to make recommendations for or against using the diets. She said studies are now needed on the role of exercise in weight loss (as
exercise information was excluded from this analysis), the long-term effects of these diets and the
effectiveness and safety of these diets for people over the age of 53.

Co-author Christopher Gardner, PhD, assistant professor of medicine with the Stanford Center for
Research in Disease Prevention, agreed that more studies on low-carbohydrate diets are needed. "The
team did a phenomenal job of synthesizing all that's out there, but there wasn't a lot of information from
well-designed, randomized controlled trials to begin with," he said. "The obesity epidemic involves people
having weight problems for years or decades, and we need long-term data on these diets' effectiveness and
safety."

Bravata's Stanford collaborators include Gardner; Ingram Olkin, PhD; and Jane Huang, MD. Other
collaborators include Dawn Bravata, MD; Harlan Krumholz, MD, SM; and Lisa Sanders, MD - all of Yale.

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