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Reply to A Tremblay

Dear Sir:

We appreciate Tremblay’s comments on our recent meta-analysis (1) regarding the effects of dairy intake on body weight and fat. However, we are concerned that he may have overinterpreted the overall results. The primary endpoint of our meta-analysis, which included 29 randomized clinical trials (RCTs), was weight loss (n = 2101). Overall, consumption of dairy products did not result in a significant reduction in weight (−0.14 kg; 95% CI: −0.66, 0.38 kg). However, subgroup analysis indicated that consumption of dairy products reduced body weight in the context of energy restriction or short-term (<1 y) trials but had the opposite effect in ad libitum dietary interventions or long-term trials (≥1 y). Only 22 of 29 RCTs reported results on body fat (n = 1536). Similar to the results on weight loss, ad libitum or long-term trials showed no significant benefit of dairy intake on body fat. Therefore, Tremblay’s emphasis on the positive results on body fat from short-term trials has missed the big picture provided by the available evidence. The purpose of our meta-analysis was to quantitatively summarize inconsistent results from numerous small RCTs by increasing the statistical power and enhancing the precision of the estimates. In this regard, the results of our meta-analysis should be interpreted as a whole. Moreover, as discussed in our article, long-term and sustained weight loss is of greater public health and clinical significance than short-term weight loss, and thus more emphasis should be placed on longer-term results.

Tremblay suggested that increased calcium intake was the underlying mechanism for the relation between dairy intake and body fat and cited positive results from one of Zemel et al’s trials (2) as supporting evidence. Although the calcium hypothesis is interesting, empirical data to support this hypothesis remains limited. First, this study cited by Tremblay, along with several other trials conducted by Zemel et al., was based on a small sample size and short duration of follow-up. However, effect sizes from these trials tended to be much larger than those from other larger and more sufficiently powered trials. It is well known in the literature that initial positive results from small trials can often be inflated. Second, the hypothesized benefit of calcium intake on body weight regulation was not supported by the largest study conducted to date evaluating this association (3). This study did not find a significant effect of calcium (supplements of 1500 mg Ca/d) on body weight or fat mass in overweight or obese adults after 2 y of supplementation (3).

It should be noted that the lack of benefit of dairy in long-term studies on body weight could be due to multiple reasons, including decreased compliance over time and adding calories to the diet through increased intake of dairy products. On average, one serving of low-fat milk contains 102 kcal. The increased energy intake in some of the ad libitum dairy interventions indicates that the effect of dairy foods on satiety is likely to be small. The study by Barr et al (4) in which participants in the dairy group actually increased their caloric intake serves as a cautionary note for promoting dairy products as a weight-control tool without emphasizing overall energy balance.

Dairy is a complex food. In addition to calcium, it contains numerous other bioactive compounds that have a myriad of health effects beyond body weight regulation (5, 6). Our meta-analysis has identified important gaps in the literature and underscored the importance of conducting larger and more rigorous trials to reach more solid conclusions. In addition, future trials need to test specific dairy subtypes, such as low-fat compared with high-fat milk, and fermented products such as yogurt and cheese on body weight. Finally, whether we are epidemiologists or physiologists, we need to be mindful that even the most elegant hypotheses can be refuted by the reality of the data.

None of the authors had a conflict of interest to disclose.

Mu Chen
Vasanti S Malik
Frank B Hu

Department of Nutrition
Harvard School of Public Health
Boston, MA 02115

E-mail: nhbh@channing.harvard.edu

An Pan

Saw Swee Hock School of Public Health and Yong Loo Lin School of Medicine
National University of Singapore and National University Health System
Singapore

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