Meat consumption and prospective weight change

Dear Sir:

In a recent issue of the Journal, Vergnaud et al (1) reported that meat consumption is positively associated with prospective weight change. This is another publication derived from the database of the European Prospective Investigation into Cancer and Nutrition (EPIC) study. A total of 103,455 men and 270,348 women, aged 25–70 y, from 15 European countries or regions were assessed for usual dietary intake and lifestyle and health factors at baseline as well as weight change for the subsequent 5 y. The findings that meat consumption is positively associated with prospective weight gain, while not novel, are interesting. However, several questions related to the article's experimental plan and data analysis diminish its value.

First of all, usual dietary intake was assessed only at baseline and not during the subsequent years. It is well recognized that an individual's dietary pattern often changes over time. Also, some study centers adopted a self-administered quantitative questionnaire to assess usual dietary intake, whereas others used combined dietary methods (reference 1, p 400). The accuracy of dietary intake assessment is always a concern, even in a well-planned project (2, 3). By analyzing combined dietary intake data obtained from different populations using different methods, the accuracy of the results may be compromised.

Second, a simple act of measuring weight gain, a major objective of the article, was not performed uniformly and had to partly rely on self-reporting of participants. As stated in the article, ''weight at follow-up was self-reported in most centers and was thus likely underestimated'' (p 405), which indicates that even the authors doubt its accuracy. With a large database, it is unclear why all the weight gain data were combined for analysis. A true association between weight change and meat consumption may thus be masked by inconsistent weight measurements.

Another puzzling question is that participants who consumed more meat had less weight gain in several centers, whereas those with lower meat consumption had higher weight gain (*see* the authors' Table 1). For example, participants at the Oxford General center consumed far smaller amounts of meat (average of 86 and 82 kcal/d for men and women, respectively) than did the total subjects (average of 296 and 195 kcal/d for men and women, respectively). Yet, the annual weight gain of participants at the Oxford General center was much higher (average of 557 and 560 g/y for men and women, respectively) than that of the total subjects (average of 454 and 416 g/y for men and women, respectively). On the other hand, participants at the Denmark center had the highest meat consumption (average of 398 and 246 kcal/d for men and women, respectively), and yet they had the second lowest weight gain (average of 331 and 211 g/y for men and women, respectively) among all centers. As stated by the authors, the very large sample size and the high heterogeneity of dietary patterns and obesity prevalence in the study population is the main strength of the present study (p 405). However, if the data are not properly treated or analyzed, the heterogeneity of populations may turn into a weakness rather than a strength as in this case.

In addition, some of the data presented are unclear. The weight change data shown in Table 2, for example, are similar among quintiles of meat consumption (averages of 487, 429, and 447 g/y for men and 440, 396, and 426 g/y for women for quintiles 1, 3, and 5, respectively). An explanation of the calculation using the Oxford method, or inclusion of actual weight change data, would make it easier to comprehend. Also, the unit for total meat intake should be g/d rather than % as shown.

In addition to weight gain, intake of total energy, fish and shellfish, eggs, potatoes, and drinks was positively correlated with meat consumption in both men and women, whereas consumption of fruit, vegetables, legumes, dairy products, cereals, and added fats was negatively correlated (the authors' Table 2). Only the intake of sugar and confectionery was not clearly associated with meat consumption. Also, all of the assessed lifestyle factors, such as educational level, physical activity, previous illness, and smoking status, are closely associated with meat consumption. The authors do not adequately address the rationale of highlighting the association between weight change and meat consumption over other variables assessed. It would be of interest to determine whether meat consumption is indeed a more relevant determinant than all of the other measures, especially total energy consumption, physical activity, and drinking, of prospective weight gain.

The association between meat consumption and weight gain has been a subject of many studies (4, 5). Even with the availability of the large EPIC database, this article does not answer the question as to whether weight gain is fully attributable to meat intake itself, as intended (p. 399). A better insight of this association may be obtained by analyzing data available from each center individually. Similarly, analyzing only the weight data obtained by the project personnel, but not those that were self-reported, may yield a more accurate picture concerning the role of meat consumption in weight gain.

The author did not declare any conflicts of interest.

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