The case when both the predicted variable (LDL-C) and the predictor variable (fat density) are categorical was also considered and yielded similar results, although not statistically significant[1]. The use of the dichotomised version of LDL-C instead of its continuous version would not change the conclusion because, to an excellent approximation, attenuation factors under logistic regression (for dichotomous predicted variable) are the same as under linear regression[10]. As for a predictor variable categorised into quantiles, the observed relationship can only be attenuated[11].

According to the intuitive explanation provided in the paper, underreporting was considered to be at least the major, if not the only, part of error in dietary questionnaire measurements. If it were so, then λ_Q would be close to $1/\beta_1$ and, because usually $\beta_1 < 1$ due to the flattened-slope phenomenon (high consumers tend to underreport whereas low consumers tend to overreport), λ_Q would indeed be greater than 1. However, empirical data suggest that one cannot neglect random variation in dietary self-report, as it seems in practice to compensate for, and even overwhelm, the overestimating impact of systematic error[9].

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The authors reply in plain English

Sir,

We would like to thank Drs Thiébaut and Kipnis for their thoughtful comments. We agree that random reporting error is always present and results in attenuated associations. It is clearly necessary to recognise all types of error and their potential impact on epidemiological associations.

As the commentary correctly points out, we were not focusing on random error in our paper[1]. Even if in some cases random error may overwhelm biases from systematic error, this may not always be the case. Whether true associations are overestimated or underestimated depends on the magnitudes of these two types of error, as well as on the direction of the bias in relation to the underlying association. The purpose of our paper was to illustrate, not to prove, that non-random error can in theory inflate an association.

The effects of non-random errors on diet–disease associations are not always appreciated. For instance, in a recent re-analysis of data from the OPEN (Observing Protein and Energy Nutrition) study by a team including ourselves, Dr Kipnis and other researchers from National Cancer Insititute[2], we concluded that obesity-related reporting errors require much further investigation. Although the OPEN data are indeed unique in being able to characterise both types of error, it must be kept in mind that they are based on a highly selected study sample. Clearly, we need to improve our knowledge about person-specific and other non-random errors, as well as our ability to communicate about them.

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