British Journal of Nutrition

Letter to the Editor

Invited commentary in response to: Risk of overestimating treatment effects and generalisability of computer-based tailored dietary counselling

We appreciate the comments received from Okami *et al.*[1] on our recently published article, which reports the results of a study to determine whether, and to what extent, a guided, stepwise and tailored dietary counselling programme could better improve the nutrient adequacy of the diet compared with an approach based solely on generic guidelines[2]. Our study was conducted in pregnant, French women.

First, Okami *et al.* expressed concern that the effect may have been biased because, in our single-blind study, the treatment effect may have been overestimated by dietitians – who were both aware of the allocation of participants and who also assessed their diets; we refute this possibility. The dietitian was aware of the allocation but did not, in fact, 'assess the diets'. Instead, participants were asked to report their food intake directly on an online programme. They used this interface by themselves, without any contact with the dietitian. There was no interaction on this task with anyone from the staff until the participant validated a set of three 24-h dietary records. Thereafter, the records were checked by the dietitian. Only in the case of a clear inconsistency, participants were contacted by email to verify it. Those inconsistencies included outliers in the reported quantity, which lead to a suspicion of a particular error, in which case participants were asked to verify if this was indeed an error; or an abnormal energy intake, in which case participants were asked to generally verify if the records reported intake correctly. Participants could also be contacted when certain details were needed (e.g. when the food item declared was not specific enough or when it was very unusual), but the question and possible correction were limited to that precision. Participants were contacted equally from both groups, and interactions with participants were rare. Thus, it is not reasonable to believe that our interactions with participants could have had a qualitative influence on the records or could have resulted in a difference in PANDiet scores between groups. Lastly, the PANDiet score of the set of records was not immediately calculated. When checking multiple records, it is practically impossible to get any idea of the value of the score, which is the result of the statistical integration of more than thirty-four nutritional components over 3 d. Therefore, it is clearly not possible that the change in PANDiet score, which was the main outcome, could have been biased.

Second, Okami *et al.* explained that the inclusion of participants from a high social class living in an urban area may have resulted in an overestimation of the effects of the intervention. However, this claim is not supported by the data at hand. Firstly, the improvement in PANDiet score was all the more important as the initial PANDiet score was low (i.e. the effect of the dietary counselling was greater in the first than in the fourth quartile of initial score). This effect modification was high since we observed that the effect of the counselling was twice as high in women in the lower half of the initial PANDiet score, compared with those in the upper half. Secondly, we also presented results from secondary statistical models that were further adjusted for household income per person and level of education – something Okami *et al.* suggested that we do. As already indicated in the article, we did not find that these socio-economic factors had an influence on the results. In the models including treatment group, the initial PANDiet score and one adjustment factor, we found that the influence of the socio-professional category, the education level and the income on the change in PANDiet score was not significant, with *P* values of 0·84, 0·99 and 0·90, respectively (data not shown).

Overall, we do not mean that our study sample covers the broad spectrum of real socio-economic status in economically developed countries or that it would be pointless to conduct further studies in less privileged socio-economic categories. However, we assert that our data do not support, but in fact contradict, the Okami *et al.* hypothesis.

We feel that Okami *et al.*'s view is that compliance with the recommendations should be higher among people with higher levels of education and income, as illustrated by the reference that they cited[3]. We agree with this point, but with regard to general guidelines. We do not believe that this holds true when it comes to tailored dietary counselling. Indeed, tailor-made interventions, in general, have proven effective because the personalisation of advice facilitates its acceptance and implementation[4]. This feature could overcome a barrier faced by those with low education or income, who may have more difficulty implementing theoretical and generic guidelines and lack social support for doing so. Whereas dietary counselling often consists of general advice such as increasing the consumption of a broad category of foods, our step-by-step advice proposes a set of very specific pieces of advice (e.g. increasing the intake of a food that is consumed, or replacing one food item with another) and this characteristic may have been particularly

effective in this context. More generally, as we discussed in the article, the method used in our study implements simple behaviour change techniques, as is often the case in tailored dietary counselling[5,6]; these techniques should have been effective in improving intervention adherence, regardless of women's socio-economic characteristics. This effect may also be especially significant during pregnancy, which is a time of increased nutritional awareness[7], which favours adherence to recommendations[8].

Finally, we suggest that tailored dietary counselling, compared with general guidelines, may be particularly effective in individuals from a lower socio-economic status. Further studies on a broader population are needed to confirm this important characteristic with respect to social inequalities in public health nutrition.

Acknowledgements

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