Reviewer's report

**Title:** Niacin consumption and the prevalence of diabetes and obesity among the US adults: population based ecological study

**Version:** 2  **Date:** 8 May 2010

**Reviewer:** Valerie V Tarasuk

**Reviewer's report:**

**Major Compulsory Revisions**

1. Although the hypothesis that the rising prevalence of diabetes in the US is linked to the increased exposure to niacin is very provocative, for this to be a scholarly piece of work, a much more rigorous examination of this hypothesis is required. The authors need to systematically examine and discuss alternative explanations for the observed correlations between niacin consumption and diabetes and obesity prevalence rates in the US over the past 60-70 years. As the paper is written now, one has the impression that the only relevant dietary change over this vast period of time was in niacin consumption, and niacin consumption changed only because of the increased concentration of niacin in grain products. I realize that it is difficult to control for potentially confounding variables in ecological studies, but the effect of confounding on the observed associations nonetheless needs to be addressed in both the analytic models and in the discussion of results. In particular, I think the authors need to consider what has happened to total energy consumption and to food consumption patterns more broadly over this same period. In addition, I think it would be worthwhile to examine trends in macronutrient consumption, fibre consumption, and whatever proxies for energy expenditure are available. It is also necessary to consider changes in consumption levels for other micronutrients, because the changes in fortification practices that underpin the observed increases in niacin consumption are not restricted to niacin.

2. I am troubled by the authors’ inference that the effect of high and low carbohydrate diets in relation to obesity and diabetes has somehow changed over time. A more thorough and thoughtful review of this literature is warranted, if indeed the discussion is even relevant to the present paper.

**Discretionary Revisions**

3. The logic for considering niacin in relation to both obesity and diabetes merits review. As written currently, the case for considering obesity seems incidental. In the third paragraph of the results, for example, the authors surmise that because obesity is a risk factor for type 2 diabetes and niacin is associated with diabetes, a change in niacin consumption might also be expected to associate with obesity. Following this logic, niacin could be linked to all risk factors for diabetes. Focusing this analysis on the relation between niacin and diabetes, and considering obesity only as an intermediary variable, would make for a much
more focused argument.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.