Reviewer’s report

Title: Dairy product consumption and hypertension risk in a prospective French cohort of women

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Reviewer: Jean-Philippe Drouin-Chartier

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NUTJ-D-19-00332
Dairy product consumption and hypertension risk in a prospective French cohort of women.

In this manuscript, Villaverde et al. investigated the association between dairy product consumption and risk of hypertension in the E3N cohort study of French women. Authors found no overall association between dairy intake and hypertension risk, with the exception of a weak positive association between processed cheese and hypertension risk.

The rationale is important and interesting, and the paper is relatively well written. Strengths include the large sample size and the detailed assessment of dairy intake. I consider the main limitation of the paper the fact that authors did not explore in detail the potential association between specific dairy foods or dairy groups and hypertension. Please see my comments to that extent below.

Abstract:
- Please specify that diet was assessed only at baseline.

Introduction:
- Results from Mendelian Randomization studies on dairy intake and risk of disease need to be interpreted carefully. It is felt that authors should provide more detail about this in the introduction. Using lactase persistence as an instrumental variable for dairy intake is partly adequate. Lactose content is much higher in milk compared with yogurt and cheese. Lactase persistence has been associated with milk intake, but not the intake of other dairy foods, which raise concerns regarding interpretation of results from MR on total dairy intake. Please see the recent paper in the Epic-Interact cohort published in diabetes care by Vissers et al. Thus, I think that it is important to cite results from MR study in the introduction, but those should be better contextualized.

Methods:
- Please clarify why individuals with diabetes were not excluded at baseline.
- Please clarify why individuals with no dairy intake (n=20) were excluded at baseline.
- Correlation coefficients from the validation study should be provided for each of the 34 items on dairy. Such information could be added in a supplementary table.
- The last 2-3 sentences of the "covariate assessment" section make no sense ("The dietary questionnaire...."). Please rephrase.
- Statistical analyses:
  o Authors should consider providing a basic age-adjusted model.
  o Adjusting for magnesium and potassium is incorrect. Dairy foods are important sources of these nutrients. Authors should consider developing model 3 using only food covariates (no nutrients). Adjusting for sodium intake is also problematic for cheese analyses - cheese is rich in sodium.
  o "In all models, all considered dairy variables were mutually adjusted for." Are you referring to the 34 dairy items or only the one you conducted analyses on? Please clarify.
  o An additional model should be tested by replacing individual food items by a diet quality score.
like the AHEI.

Authors should consider using quintiles instead of quartiles. The difference in total dairy intake (and other dairy products) between the highest and lowest quartile is very small, which may have affected the results.

Results:
- It is felt that table 1 is incomplete for the readership. The following information should be added: intake of total and subtypes of dairy, menopausal status, unprocessed red meat, and a diet quality indicator.
- Table 2 - it is felt that flipping the table the other way around (having 1 model per line and each category of intake on the same line) would be easier to read.
- Authors need to explore association between hypertension risk and subtypes of milk (reduced-fat, whole milk), subtypes of yogurt, and also total consumption of low-fat dairy and high-fat dairy. Authors have accessed to data on 34 individual dairy items. They should better leverage on this unique information to deeply evaluate how dairy intake is associated with hypertension risk.

Discussion:
- The discussion is too short.
- The paragraph on yogurt is unclear. Yogurt consumption is usually associated with healthier lifestyle and dietary habits. This has been reported in many studies. The sentence "The weak association we observed in yoghurt non consumers could thus be associated with adverse lifestyle factors and deserves further investigation" is not supported by any data and makes no sense. Please clarify or remove.
- Processed cheese is usually consumed with unhealthy foods/dietary patterns (e.g. burgers). This may have driven the association. There is a risk for residual confounding that should be discussed by authors.

Level of interest
Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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