Reviewer's report

Title: Chocolate intake and arterial stiffness in subjects with cardiovascular risk factors

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Reviewer: Kimon Stamatelopoulos

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This study by Recio-Rodriguez et al examines possible associations between chocolate consumption and arterial stiffening in individuals without overt cardiovascular disease but in high risk according to their cv risk factor profile. Although the research question is important and novel, this study overall fails to provide sufficient answers at its form, mainly due to study population issues.

Major comments

1. Diabetes is considered a CAD equivalent conferring very high cv risk as compared to other cv risk factors. Therefore it is not safe to jump to conclusions when using mixed populations with and without DM in primary prevention settings. This problem is augmented when assessing dietary interventions affecting glucose control. It is not surprising that most patients in the group of no chocolate consumption, DM was highly prevalent (>30%) since chocolate is not recommended in a diabetic diet. On the other hand DM patients who reported increased chocolate use were probably not compliant to other medical recommendations as well resulting in a higher overall cv risk profile. Thus including DM patients in this kind of study introduces several biases unrelated to chocolate effects per se. The data should be reanalyzed excluding patients with DM.

2. There are also other differences between subgroups which further prevents correct interpretation of these results. Age and gender differences are quite pronounced and I am not certain if statistical adjustment is sufficient for differences of this magnitude because populations may not be comparable. Where the participants consecutively recruited? Moreover, adjustments for BP parameters and particularly those differing among groups should be performed since arterial stiffening is mainly affected by age and BP.

3. Medical treatment and particularly antihypertensive and hypolipidemic drugs should be reported and included in the multivariate analysis.

4. The sample size of the subgroup with high chocolate consumption is marginally not adequate to assess differences in PWV. Since the authors report negative results, it is particularly important for this study to provide sufficient power. The SD for the PWV values used in their sample size calculations was too high. It is possible that SD would be smaller (and therefore a smaller sample would be necessary) if DM patients were excluded since the study group would become more homogeneous.
Minor comments
1. Please provide in summary the methods and materials used to measure the end-points of this study.
2. At some points the text in results is inconsistent with the provided tables and figures.
3. Percentages in the table should be presented as a proportion within each group separately.

Level of interest: An article of importance in its field

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

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests