Reviewer's report:

Title: Health-related behaviours and their relationship with self-rated health among Canadian adults

Version: 0 Date: 16 Apr 2019

Reviewer: Matthew Zack

To describe relationships between some health-related behaviors and self-rated health, a measure of health status and health-related quality of life and a predictor of mortality and chronic diseases, the authors analyzed data from almost 6,800 Canadian adults surveyed from 2012 through 2015. For men and women, good-to-excellent self-rated health was directly related to higher household income, more education, adequate sleep, adequate fruit and vegetable intake, and adequate physical activity but inversely related to age and current smoking. High-risk alcohol intake, especially among women, also appeared directly related to better self-rated health. The number of positive health behaviors was not associated with self-rated health, and adequate sleep was the only behavior persistently related to better self-rated health in both sexes after adjustment for other health behaviors and sociodemographic characteristics. The authors conclude that current Canadian public health priorities and promotion programs may not fully align with what Canadian adults relate their health to and that further study of sleep adequacy in both sexes and alcohol use in women is needed to improve this alignment.

Although the authors do not list the strengths of their study, the authors have used a data source representative of noninstitutionalized, civilian adults that allows generalization of their findings to this Canadian population (lines 63-74). The authors used an appropriate analytical strategy to account for the survey design (lines 101-115).

The authors describe several study limitations (lines 237-243): The small sample size, a 25% non-response rate, self-reported health behaviors and sociodemographic characteristics, and dichotomizing behaviors and self-rated health, perhaps biasing the relationships between these behaviors and self-rated health.
Besides these study limitations, the authors should consider and discuss the following other study limitations:

1. Even though the two survey cycles collected information on 11,485 respondents, the analytical sample included only 6,789 respondents (lines 64-72). Were the 4,696 excluded respondents (41% of the total) pregnant women and children? Or, were other adults excluded? The authors should account for all the persons eligible and ineligible for their study and why they were ineligible.

2. The authors should explain further why they dichotomized their exposure variables and outcome variables knowing that this would affect the relationships between these variables and reduce the statistical power to assess these relationships. For example, their smoking status variable groups together former smokers with never smokers (lines 84 86).

3. The authors incorrectly attribute the attenuation of the relationship between current smoking and self-rated health after adjustment for education and income to "current smoking status [being] an important mediator between lower socioeconomic status and [self-rated health]" (lines 160-163). If current smoking status mediated between socioeconomic status and self-rated health, including current smoking status would attenuate the relationship between education and income and self-rated health, not attenuate the relationship between current smoking status and self-rated health.

4. The authors describe the relationship between smoking and self-rated health as stronger for men than for women and the relationship between fruit and vegetable intake and self-rated health as stronger for women than for men (lines 171-174). Actually, the 95% confidence intervals for the odds ratios in these two relationships overlap quite a bit for men and women (see table 3, models 7 and 8), so that the strengths of these relationships are comparable between men and women.

5. To explain the discrepant relationships of high-risk alcohol use and self-rated health between women and men, the author recommend further study "to understand the reasons behind increased binge-drinking among women" (lines 247-251). However, the only data the authors cite about binge-drinking (lines 141-144) do not identify such an increase among women.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

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