Reviewer's report

Title: Sexual Dimorphism in the Incidence of Human Cancers

Version: 1 Date: 02 Jan 2019

Reviewer: Wanqing Wen

Reviewer's report:

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The authors analyzed the sex differences of cancer incidence rates from four sets of cancer incidence data. While this report provide some useful information, some concerns needs to be addressed.

1. The authors stated "The incidence rates were normalized ... and age-adjusted to population 2000". Where population was refereed to? American or the World population?

2. Usually we use the term "the standardized incidence rates", not the "normalized" rates.

3. The authors used the ANOVA test and Student's t-test to compare standardized incidence rates. The appropriate methods should be Poisson test or based on the Gamma Distribution. (see Fay, M. P. and Feuer, E. J. (1997), "Confidence Intervals for Directly Standardized Rates: A Method Based on the Gamma Distribution," Statistics in Medicine, 16, 791-801)

4. The authors stated "If the incidence ratio was less than 1, the negative reciprocal ratio was used as the sex-dimorphic ratio." Why a ratio less than 1, such as 0.5, is negative?
5. On page 8, the authors compared sex-specific incidence rates between USA and Sweden, the incidence rates in USA and Sweden were plotted in two different figures. To visually compare incidence rates between USA and Sweden, the need to be plotted in the same figure.

6. The last two sentences on page 9 (starting with "The interesting regional") are abrupt, and should be moved to the Discussion section.

7. Please delete the sentences "We collected 30 types ...' and "from 24 types ..." in the "Sources of cancer incidence data" section on page 5, because they were mentioned again in the next section (page 6).

8. Please change "because of no female incidence" to "because of lack of female incidence" on page 10.

9. The sentence "and the incidence of stomach, no sexual dimorphism was observed" on page 10 is not clear.

10. The sentence "It would be interesting to investigate what historical factors affect sexual dimorphism or incidence of these cancers for better understanding of the underlying mechanisms" on page 11 could be deleted.

11. The whole section "Sexual dimorphism between Mayo Clinic hospitalization and the USA populations" provided little useful information, and could be deleted.

12. The Discussion section only discussed sex hormones, as if sex hormones are the only major factor for the sex differences of cancer incidences. The discussion section needs to be strengthened. Many factors, such as life styles, behaviors, environmental exposures, play important roles in sex differences of cancer incidences. In addition, this report mainly compared USA and Sweden populations. the limitation in generalization of this report needs to be addressed.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

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

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
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Yes

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