

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Global Patterns and Trends in the Breast Cancer Incidence and Mortality According to Socio-demographic Indices: An Observational Study Based on the Global Burden of Diseases
AUTHORS	Hu, Kaimin; Ding, Peili; Wu, Yinan; Tian, Wei; Pan, Tao; Zhang, Suzhan

VERSION 1 – REVIEW

REVIEWER	Rickard Ljung Karolinska Institutet Sweden Author of the first paper on socioeconomic inequalities in BoD of breast cancer... Socioeconomic differences in the burden of disease in Sweden. Ljung R, Peterson S, Hallqvist J, Heimerson I, Diderichsen F. Bull World Health Organ. 2005 Feb;83(2):92-9. Epub 2005 Feb 24. PMID: 15744401
REVIEW RETURNED	10-Mar-2019

GENERAL COMMENTS	<p>This is a nice effort to assess the global burden of disease of breast cancer by socioeconomic factors. However, despite interesting work the paper is very poorly written. Extensive English proof reading is required.</p> <p>The analyses and statistics are not difficult - the data is already collected. However, comparing incidence and mortality between countries with huge differences in health care services, screening and data register quality is challenging.</p> <p>I would suggest the authors to skip the mortality-to-incidence ratio. This ratio is massively biased by differences in quality in both incidence and mortality data. Instead the authors could focus on discussing the potential limitations, pitfalls and caveats when comparing across countries.</p> <p>I would strongly suggest focusing on this in the discussion.</p>
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REVIEWER	Roberto Lillini Fondazione IRCCS "Istituto Nazionale dei Tumori", Milan, Italy
REVIEW RETURNED	10-May-2019

GENERAL COMMENTS	<p>The article doesn't need any particular revision. My only suggestions regard some very minor correction:</p> <ul style="list-style-type: none"> - in "Strengths and limitations of this study : ", I will define the acronym "GBD 2016". In fact, it's defined but only later, in the "Introduction";
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	<ul style="list-style-type: none"> - In "Material and Methods" the authors should correct "CONIDEX" in "CONINDEX" (right name of the cited STATA library); - please verify the good readability of the figure in press.
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VERSION 1 – AUTHOR RESPONSE

Reviewer #1 Rickard Ljung:

1. Comment: Despite interesting work the paper is very poorly written. Extensive English proof reading is required.

Response: We felt very sorry for our poor written English. An English-speaking colleague revised our paper to improve the quality of the English throughout our manuscript.

2. Comment: I would suggest the authors to skip the mortality-to-incidence ratio. This ratio is massively biased by differences in quality in both incidence and mortality data. Instead the authors could focus on discussing the potential limitations, pitfalls and caveats when comparing across countries. I would strongly suggest focusing on this in the discussion.

Response: Some studies indicated that the complement of the mortality-to-incidence (MI) ratio was a proper approximation as 5-year overall survival rate for different cancers^{1,2}. Recently, Libby Ellis and colleagues showed the absolute difference between (1 - MI ratio) and 5-year net survival in women breast cancer was only 1.1 percent in England in 2009². Though MI ratio was an indicator for the departure of mortality in relation to incidence from expectation, we quite agree with reviewer that the MI ratio could be biased by differences in quality of law data from different countries. Therefore, we have added our concerns about our results in the last paragraph of discussion in our revised manuscript. More incidence and mortality data from national wide observational studies or cancer registries are needed, especially for countries with low- and middle-income countries, to estimate more accurate MI ratios.

Reviewer #2 Roberto Lillini:

1. Comment: In "Strengths and limitations of this study : ", I will define the acronym "GBD 2016". In fact, it's defined but only later, in the "Introduction".

Response: We modified the content of "Strengths and limitations of this study" according to the requirement of this journal in our revised manuscript.

2. Comment: In "Material and Methods" the authors should correct "CONIDEX" in "CONINDEX" (right name of the cited STATA library).

Response: We felt quite sorry for our silly mistake, and had corrected "CONIDEX" to "CONINDEX" in our revised manuscript.

3. Comment: please verify the good readability of the figure in press.

Response: We verified the readability of the figures in our manuscript. Different colors were used to distinguish different age groups in figure 1. Solid and dashed lines, different colors and shapes of markers were used to distinguish different age groups in figure 4.

Reference:

1. Asadzadeh Vostakolaei F, Karim-Kos HE, Janssen-Heijnen ML, Visser O, Verbeek AL, Kiemeny LA. The validity of the mortality to incidence ratio as a proxy for site-specific cancer survival. *Eur J Public Health*. 2011;21(5):573-577.
2. Ellis L, Belot A, Rachet B, Coleman MP. The Mortality-to-Incidence Ratio Is Not a Valid Proxy for Cancer Survival. *J Glob Oncol*. 2019 May;5:1-9.