Author's response to reviews

Title: Independent external validation of cardiovascular disease mortality in women utilising Framingham and SCORE risk models: a mortality follow-up study

Authors:

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Version: 3
Date: 12 September 2014

Author's response to reviews: see over
Dear Sir,

Re: Independent external validation of cardiovascular disease mortality in women utilising Framingham and SCORE risk models: a mortality follow-up study

We are submitting a revised version of the manuscript and figures addressing the editorial requirements. We have attached the revised manuscript, figures 1 and 2, and the STROBE checklist.

We conducted an independent external validation of three cardiovascular risk score models (Framingham risk score model and SCORE risk charts developed for low-risk regions and high-risk regions in Europe) on a prospective cohort of 4487 Australian women with no baseline history of heart disease, diabetes or stroke.

Participants were selected from the population-based National Heart Foundation third Risk Factor Prevalence Study and the baseline data were linked with the National Death Index to determine the causes of death during the 10 years follow-up. The 10-year risk of cardiovascular disease mortality was calculated using the Framingham risk score and SCORE models and the predictive accuracy of the three risk score models were assessed using both discrimination and calibration.

The discriminative ability of the Framingham and SCORE models were good (area under the curve > 0.85). Although all models overestimated the number of cardiovascular deaths by greater than 15%, the Hosmer-Lemeshow test indicated that the Framingham risk score model and SCORE-Low models were calibrated and hence suitable for predicting the 10-year cardiovascular mortality risk in this Australian population. An assessment of the treatment thresholds for each of the three models in identifying participants recommended for treatment were found to be inadequate, with low sensitivity and high specificity resulting from the high recommended thresholds. Lower treatment thresholds of 8.7% for the Framingham risk score model, 0.8% for the SCORE-Low model and 1.3% for the SCORE-High model were identified for each model using the Youden index, at greater than 78% sensitivity and 80% specificity.

Framingham risk score model and SCORE risk chart for low-risk regions are recommended for use in the Australian women population for predicting the 10-year cardiovascular mortality risk. These models demonstrate good discrimination and calibration performance. Lower treatment thresholds are proposed for better identification of individuals for treatment.

We declare that no competing interests exist. Ethical approval for the study data was obtained in advance from the Australian Institute of Health Interim Ethics Committee, after consultation with the Commonwealth Privacy Commissioner. This study was approved by the Human Research Ethics Committee at Curtin University, and complies with the Declaration of Helsinki.

We will be grateful for your careful consideration of this revision to address the editorial requirements.

Yours faithfully,

Professor Satvinder S. Dhaliwal
Point-by-point response to reviewer:

Reviewer's report

Title: Independent external validation of cardiovascular disease mortality in women utilising Framingham and SCORE risk models: a mortality follow-up study

Version: 2 Date: 28 August 2014

Reviewer: Ivanny Marchant

Reviewer's report:

In the article “Independent external validation of cardiovascular disease mortality in women utilising Framingham and SCORE risk models: a mortality follow-up study” by Goh et al., the authors report the findings of an external validation study designed to evaluate the applicability of three different risk estimation systems: Framingham, SCORE for low risk regions and SCORE for high risk regions in a cohort of 4487 Australian adult women (age range 20 – 69 years) by comparing the risks predicted and the risks observed over ten years of follow up. The manuscript is well written and adheres to relevant standards.

The authors have rephrased the text and introduced corrections concerning the methods, discussion and conclusion section. They have answered my points satisfactorily.

The sole remaining point concerns discretionary revisions that represent indeed different views about graphic representations and as such they cannot be considered as an impediment for publication of the manuscript.

Response: We thank the reviewer for the comment.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

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