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Joseph, Philip

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Prognostic validation of a non-laboratory and a laboratory based cardiovascular disease risk score in multiple regions of the world

1. Philip Joseph[1],
2. Salim Yusuf[1],
3. Shun Fu Lee[1],
4. Quazi Ibrahim[1],
5. Koon Teo[1],
6. Sumathy Rangarajan[1],
7. Rajeev Gupta[2],
8. Annika Rosengren[3],
9. Scott A Lear[4],
10. Alvaro Avezum[5],
11. Patricio Lopez-Jaramillo[6],
12. Sadi Gulec[7],
13. Afzalhussein Yusufali[8],
14. Jephat Chifamba[9],
15. Fernando Lanas[10],
16. Rajesh Kumar[11],
17. Noushin Mohammadifard[12],
18. Viswanathan Mohan[13],
19. Prem Mony[14],
20. Annamarie Kruger[15],
21. Xu Liu[16],
22. Baoxia Guo[17],
23. Wenqi Zhao[18],
24. Youzhu Yang[19],
25. Rajamohanan Pillai[20],
26. Rafael Diaz[21],
27. Ambigga Krishnapillai[22],
28. Romaina Iqbal[23],
29. Rita Yusuf[24],
30. Andrzej Szuba[25],
31. Sonia S Anand[1]
32. on behalf of the PURE INVESTIGATORS

Abstract

Objective To evaluate the performance of the non-laboratory INTERHEART risk score (NL-IHRS) to predict incident cardiovascular disease (CVD) across seven major geographic regions of the world. The secondary objective was to evaluate the performance of the fasting cholesterol-based IHRS (FC-IHRS).

Methods Using measures of discrimination and calibration, we tested the performance of the NL-IHRS (n=100 475) and FC-IHRS (n=107 863) for predicting incident CVD in a community-based, prospective study across seven geographic regions: South Asia, China, Southeast Asia,

Middle East, Europe/North America, South America and Africa. CVD was defined as the composite of cardiovascular death, myocardial infarction, stroke, heart failure or coronary revascularisation.

Results Mean age of the study population was 50.53 (SD 9.79) years and mean follow-up was 4.89 (SD 2.24) years. The NL-IHRS had moderate to good discrimination for incident CVD across geographic regions (concordance statistic (C-statistic) ranging from 0.64 to 0.74), although recalibration was necessary in all regions, which improved its performance in the overall cohort (increase in C-statistic from 0.69 to 0.72, p<0.001). Regional recalibration was also necessary for the FC-IHRS, which also improved its overall discrimination (increase in C-statistic from 0.71 to 0.74, p<0.001). In 85 078 participants with complete data for both scores, discrimination was only modestly better with the FC-IHRS compared with the NL-IHRS (0.74 vs 0.73, p<0.001).

Conclusions External validations of the NL-IHRS and FC-IHRS suggest that regionally recalibrated versions of both can be useful for estimating CVD risk across a diverse range of community-based populations. CVD prediction using a non-laboratory score can provide similar accuracy to laboratory-based methods.

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