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ARE THERE GENDER DIFFERENCES IN THE RELATIVE PREDICTIVE ABILITY OF LUNG FUNCTION IN ALL-CAUSE MORTALITY? FINDINGS FROM 13 YEARS OF FOLLOW-UP IN THE SCOTTISH HEALTH SURVEY-MORTALITY LINKED DATASETS (1995 TO 2008)

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Objectives Lung function has been shown to be a long-term predictor of mortality from a range of causes in addition to respiratory disease. However, few studies have evaluated its predictive value relative to other risk factors, and the comparative contributions of alternative measures of lung function are unclear. Further, the majority of such studies have included men only, or – where available – data on women have tended to be combined with those on men, thus gender differentials have been little explored. We addressed these issues in data with up to 13 years of mortality follow-up.

Design Repeated cross-sectional data from 1995, 1998, and 2003 Scottish Health Surveys individually linked (92% consent) to mortality data up to 2008. We compared the relative mortality associations of absolute levels of Forced Expiratory Volume in 1 second (FEV1), Forced Vital Capacity (FVC) and a range of common chronic disease risk factors – current smoking, body mass index, diabetes, systolic blood pressure, total and HDL cholesterol, height and social class assessed during the survey. Comparisons of the relative importance of different risk factors were made possible by using the relative index of inequality (RII) which provides a standardised summary of the ranking of respondents across risk factors measured on different scales. We conducted sex-stratified multiple Cox regression.

Setting Scotland.

Participants 6,069 men and 6,981 women aged over 16 years with complete data.

Main outcome measure All-cause mortality.

Results When the risk factors were considered separately, FEV1 ranked first for men (age- and height-adjusted RII HR: 15.2; 95% CI 8.69 to 26.5) and women (35.3 (17.4, 71.7)). FVC was third (5.78 (3.57, 9.35)) after cigarette smoking among men and second (11.1 (5.94, 20.6)) for women. On mutual adjustment by all the risk factors, FEV1 remained most important for women (15.7 (4.48, 55.3)) but similar (7.62 (2.92, 19.9) for FEV1) to diabetes (5.97 (2.94, 12.1)) for men; FVC was no longer significantly associated with mortality for either sex.

Conclusion Lung function is a key predictor of mortality, with strongest effects for FEV1. Associations may be more pronounced among women. Future research should investigate the extent to which the use of the RII has impacted on findings; alternatives such as Population Attributable Risk % could also be explored. This work highlights the usefulness of lung function as a biomarker of future susceptibility to disease and its potential for use as a monitoring tool should be considered.