

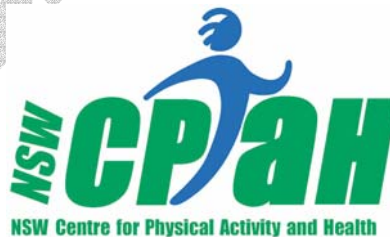
Development of a Chronic Disease Risk Factor Index in the NSW Health Survey Program

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Executive Summary

Background

The aim of this study was to explore methods of creating a risk factor index for investigating clustered chronic disease risk factors and to identify population sub-groups at high risk for chronic disease based on clusters of risk behaviour as reported in the 2002 NSW Health survey.

The chronic disease outcomes or conditions included in the Chronic Disease Prevention Strategy 2003-2007 (NSW Department of Health, 2003) are cardiovascular diseases (including ischaemic heart disease, stroke and hypertension), cancers, asthma and chronic lung disease, non-insulin dependent (type II) diabetes, obesity, injuries from falls, and poor emotional and psychological well-being. The primary risk factors agreed upon as potentially contributing to the strategy include smoking, nutrition, hazardous alcohol use, physical inactivity, and psychosocial risk factors such as stress. This model formed the basis of the analysis plan presented here, with a number of modifications due to both theoretical and measurement issues.

Methods

Three methods for defining these five factors to construct a chronic disease risk factor index were explored:

1. Utilising dichotomous categories currently used for reporting by the NSW Continuous Health Survey program as a basis for scoring on each risk factor, and summing the scores across risk factors to calculate the final index for each respondent.
2. Scoring for each risk factor was also weighted proportionate to its contribution to the total burden of disease (measured in disability-adjusted life years, or DALYs; Mathers, Vos & Stevenson, 1999).
3. To account for this linear association, a third scoring option was developed, whereby the total risk associated with each risk factor was divided across levels of exposure to the risk factor.

Results

Of the total sample aged 16 years or over, 92.8% (N = 11 710) responded to all items necessary for calculation of the indices and were included in the analysis.

Gender

The mean risk factor index was significantly higher among men than women for both risk factor index 1 and risk factor index 3 ($p < 0.001$).

Socioeconomic Disadvantage

Mean risk factor index across all three indices increased significantly with increasing socioeconomic disadvantage for both men and women ($p < 0.001$).

Age

Mean risk factor index across all three indices was significantly different between age groups for both men and women ($p < 0.001$). Differences between males and females in the pattern of mean risk factor index 3 in older age groups suggests that there is a steady decline in risk with age among women that is not evident among men.

Education

Mean risk factor index across all three indices was significantly different between education levels for both men and women ($p < 0.001$). Similar patterns across levels of education were found for both men and women using each risk factor index, and those who had completed a tertiary degree had lowest risk across all indices for both men and women.

Country of Birth

Those born in Australia had a significantly higher mean risk factor index 1 and mean risk factor 3 compared with those born elsewhere. When separated by gender, the mean of all indices was significantly higher among those born in Australia than those born elsewhere ($p < 0.001$).

Language

The majority of the sample spoke English at home (92.8%), and had a significantly higher mean risk factor index 1 and risk factor 3 compared to those who spoke a language other than English. Among men, higher mean scores were evident among English-speaking respondents for all risk factor indices ($p < 0.01$). English-speaking women had a significantly higher mean risk factor index 1 and risk factor index 3 compared to those who spoke a language other than English at home, but there was no significant difference in mean risk factor 2 between English-speaking and non-English speaking women.

Area Health Service

The mean for each risk factor index varied significantly across Area Health Services for both men and women ($p < 0.001$). Examination by gender revealed a slightly higher mean risk for all indices among women in the Hunter and Wentworth AHSs relative to other AHSs that was not seen among men. Similarly, for risk factor index 2, a higher mean risk was evident among women in South Western Sydney relative to mean index for other AHSs, but this was not apparent among men in South Western Sydney.

Discussion

The findings presented here highlight that different methods of calculating a chronic disease risk factor index can result in different conclusions when attempting to identify most at-risk groups. The findings also suggest that it may be inappropriate to define groups as 'at risk' of chronic disease outcomes based on number of risk factors alone.

However, consistent findings across all indices suggest that risk behaviours decrease with increasing socioeconomic advantage and education among both men and women, regardless of whether methods used to calculate the risk index account for the differential contribution of risk factors to the total burden of disease or the risk associated with graded levels of exposure to the risk factor. Speaking a language other than English at home and being born outside Australia were significantly associated with lower mean risk, with the exception of risk factor index 2 among women (for which there was no significant difference based on language). Since risk factor index 2 is more heavily weighted for physical inactivity, lack of difference based on language may be explained by a high prevalence of physical inactivity among non-English speaking women. High levels of physical inactivity among non-English speaking women may also account for higher mean risk factor index 2 evident among women in South Western Sydney Area Health Service but not apparent for the other two indices.

Comparison of risk across age groups suggests that those aged 16-19 years have significantly less risk behaviours compared with those in all other age groups, although this may be partly attributable to misreporting of certain risk behaviours

A chronic disease risk factor index can potentially be used to identify high-risk groups to be targeted for primary prevention of chronic disease outcomes. Since individuals with multiple major risk factors seem to experience a greater increased risk of a range of chronic diseases than would be expected from the summation of the independent risks, identification and health promotion targeting of subgroups with elevated multiple risk is likely to result in substantial improvement in chronic disease incidence.