Coronary Heart Disease Risk in South Australians with Diabetes

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Introduction

The North West Adelaide Health Study (NWAHS) is a cohort study designed to study disease progression. This analysis aimed to use a model to estimate the risk of coronary heart disease (CHD) among people with type 2 diabetes within 5, 10 and 20 years of diagnosis. CHD is a major complication of diabetes, and this information will enable effective targeting for the prevention of CHD among those with type 2 diabetes.

Methods

The NWAHS used a representative population sample of adults living in the north western region of Adelaide (n=4060) to examine the prevalence of chronic conditions, including diabetes. All households within this region with a telephone connected and the telephone number listed in the Electronic White Pages were eligible for selection. Within each household, the person who had their birthday last and was aged 18 years or older, was selected for interview and invited to attend the Study clinic.

People with diabetes were defined as those who had a fasting plasma glucose level of at least 7.0mmol/L, and/or who self-reported being told by a doctor that they had type 2 diabetes. This includes those who had undiagnosed diabetes and those with diagnosed type 2 diabetes.

This analysis examines the application of the UK Prospective Diabetes Study (UKPDS) risk engine for coronary heart disease (CHD) in people with type 2 diabetes to the NWAHS population. Those aged 20 to 65 years with type 2 diabetes and with no self-reported history of CHD (n=92) were included in the analysis of CHD risk.

Box 1. Calculation of risk for CHD among those with Type 2 diabetes.

The risk engine formula was calculated as follows:

$$R(t) = 1 - \exp\{-q[(1-dt)/(1-d)\},$$

where R=risk, t = time, d = risk ratio for duration of diagnosed diabetes, and q = the product of the risk ratios for:

- Age at diagnosis;
- Sex;
- Ethnicity;
- Smoking;
- HbA1c;
- Blood pressure; and
- Lipids.

Two parameters in the risk engine were modified. Age at diagnosis of diabetes was not collected, therefore age at diagnosis was set at current age. The risk ratio for ethnicity was set at 1.00 as the ethnic backgrounds in the original model were not relevant to this population.

Results

The overall prevalence of diabetes was 6.6% (95% CI 5.8 – 7.4). Among those aged 20 to 65 years, the proportion of respondents with diabetes without CHD was 2.9% (95% CI 2.4 – 3.6). Of these (n = 92), 34.3% were previously undiagnosed.

Table 1 shows the mean risk for CHD within 5, 10 and 20 years of diagnosis for people aged between 20 and 65 with type 2 diabetes and no history of CHD.

Table 1. Mean percentage risk for CHD within 5, 10 & 20 years of diagnosis.

	Mean percentage risk	SD
5 year risk	6.7	4.8
10 year risk	15.3	10.1
20 year risk	37.8	19.9

An analysis by sex showed that compared to males, females had a statistically significantly lower risk of CHD within 5 (OR 0.53, p<0.001), 10 (OR 0.75, p<0.001) and 20 (OR 0.89, p<0.001) years. The mean risk for CHD within 5, 10 and 20 years of diagnosis for males and females is shown in Figure 1.

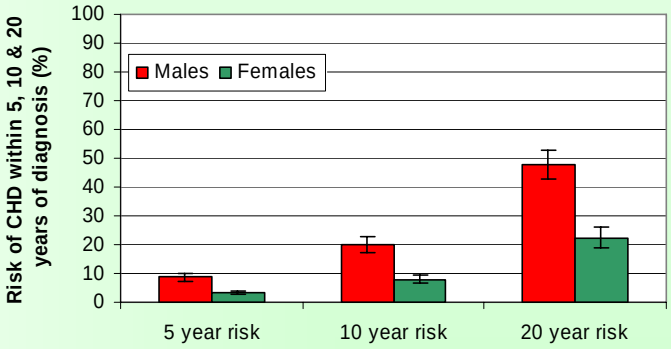

Figure 1. Mean percentage risk for CHD within 5, 10 & 20 years of diagnosis for males and females.

Conclusions

The risk of coronary heart disease among those with type 2 diabetes aged between 20 and 65 years with no self-reported history of CHD increases to nearly 40% within 20 years of diagnosis overall, and for males this is much higher. These findings provide support for interventions to prevent diabetes and risk factors for CHD, delay or halt the progression of diabetes, and that enable more effective management of diabetes.