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Established cardiovascular disease and CVD risk factors in a primary care population of middle-aged Irish men and women

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Abstract

Contemporary Irish data on the prevalence of major cardiovascular disease (CVD) risk factors are sparse. The primary aims of this study were (1) to estimate the prevalence of major cardiovascular disease risk factors, including Type 2 Diabetes Mellitus, in the general population of men and women between the ages of 50 and 69 years; and (2) to estimate the proportion of individuals in this age group at high absolute risk of cardiovascular disease events on the basis of pre-existing cardiovascular disease or as defined by the Framingham equation. This survey employed composite risk scoring to provide an estimate of the absolute risk of major CVD events using the original Framingham Risk Equation.

Material and Methods

The Cork and Kerry Diabetes and Heart Disease Study is a cross-sectional study based in primary care. Participants were drawn from the practice lists of 17 general practices affiliated with the Cork Training Programme for General Practice. These practices are broadly representative of the socio-economic profile of the area, with six urban and 11 rural practices. The practices are mostly in Co. Cork (15) and two are in Co. Kerry. A random sample of subjects was employed to recruit equal numbers of men and women in four quartiles between the ages of 50 to 69 years. The field survey work was conducted between March and August 1998. Subjects with cardiovascular disease, known diabetes mellitus or other disease, or those receiving medication, were not excluded.

Participants attended the surgery twice, initially between 8am and 10am for fasting bloods (minimum fast of 8−hours) and a repeat attendance was scheduled to complete the 12 lead ECG. Informed consent was obtained from each participant before commencing the assessment. Blood samples were collected and analyzed in the Haematology and Biochemistry laboratories at the Cork University Hospital. Full blood counts (FBC) were analysed using the Sysmex XE 2100 analyzer. Lipoprotein profile and blood glucose concentrations were determined using Roche/Hitachi A1, A2 and A3 analyzers. Glycosylated haemoglobin was measured using the Randox Corporation HI-Auto A1C-R14 system. Physical measurements included height, weight and blood pressure readings; blood pressure was measured using an anterolateral leads, to define definite left ventricular hypertrophy (LVH).

Introduction

Vascular deaths accounted for 43% of all deaths in Ireland in 1997 and in the 1999 WHO MONICA Project report, of 37 centres surveyed, Belfast recorded the 4th highest coronary-event rate in men and the 2nd highest coronary-event rate in women. Contemporary data are lacking on the distribution of cardiovascular disease risk factors in Ireland and in particular, the prevalence of Type 2 Diabetes Mellitus is not well documented. Policy formulation and guidelines on the diagnosis and management of cardiovascular disease and its associated risk factors need to be informed by relevant local data.

Evidence is emerging of benefit from treating risk factors for cardiovascular disease (CVD) at levels which are common in the general population and it is known that there are cost-effective ways to target interventions for major vascular disease. Estimation of the proportion of the population deemed to be at risk, was also estimated. The primary prevention included all those without pre-existing CVD.
The Ethics Committee of the Cork Teaching Hospitals approved the study protocol.

Results

Men accounted for 48.2% of participants in the study. Overall, 42% of the female population and 52% of the male population were overweight while 26% of the female population and 25% of the male population were obese. The proportion of individuals who were inactive or only occasionally active (Figure 2). In addition, a total of 192 individuals, 18.9% (95% CI 16.5 – 21.4) reported that they currently smoked cigarettes or tobacco, 20.6% of males and 16.5% of females had evidence of established cardiovascular disease. While there is widespread consensus on optimal blood pressures readings below 140/90, the current target level recommended in international guidelines16,17. A total of 9 (0.8%) individuals had left ventricular hypertrophy by ECG criteria. The overall prevalence of pre-existing cardiovascular disease was 13.5% (137/1018). The prevalence was higher in males and with increasing age. A total of 114 of these individuals reported a history of CVD, a further 11 were detected using the same criteria. They had had either a previous Myocardial Infarction or a stroke and 12 had evidence of a previous Myocardial Infarction using ECG criteria only. Of the 114 with self-reported CVD, 68% were taking aspirin, 6.1% were taking Warfarin and 23.7% were taking a statin (lypo-lowering drug).

The Framingham risk score, including cholesterol levels, are documented by age group and sex in Table 1. The mean total cholesterol among men was 5.61 mmol/l (s.d. 0.88) and the mean total cholesterol among women was 6.06 mmol/l (s.d. 1.01). The total cholesterol concentration exceeded 5mmol/l in a total of 836 individuals (82.2%). In addition, 759 (74.6%) had a Low-Density Lipoprotein (LDL) cholesterol concentration greater than 3.0 mmol/l, 44 (4.3%) had High Density Lipoprotein (HDL) cholesterol concentrations below 0.9 mmol/l (men) or 1.0 mmol/l (women). A total of 301 (29.6%) had triglyceride concentrations exceeding 1.7 mmol/l. The principal risk factors employed by the Framingham risk score, including cholesterol levels, are documented by age group and sex in Table 1.
In addition to those with pre-existing CVD, a further 2% of the population was deemed to be at high risk for cardiovascular disease emphasises the need for broad population-based strategies in parallel with the 'high-risk' case-finding approach. Ultimately, control of the CVD epidemic in Ireland will depend on the successful implementation of strategies to prevent smoking, increase levels of physical activity and nutrition with fewer calories, less saturated fat and salt intake and increased intake of fruit and vegetables. We now know what is required to tackle the cardiovascular disease epidemic. The question of the optimal risk score for use in the Irish population in the "high risk" category depend on the threshold chosen to define 'high absolute risk'. If we were to adopt a a risk threshold of 20% over 10 years, 10.3% of the population would be considered to be at high absolute risk of a CHD event, in addition to those with pre-existing CVD. The question of the optimal risk score for use in the Irish population merits careful consideration. Regardless of which risk score is chosen, it is crucial that we put in place mechanisms to translate this knowledge into effective policies, acting at both the individual and societal level.

Acknowledgements

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