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<th>Title</th>
<th>Established cardiovascular disease and CVD risk factors in a primary care population of middle-aged Irish men and women</th>
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<td>Author(s)</td>
<td>Perry, Ivan J.; Collins, A.; Colwell, N.; Creagh, D.; Drew, C.; Hinchion, Rita; O'Halloran, T. David</td>
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<tr>
<td>Publication date</td>
<td>2002-11</td>
</tr>
<tr>
<td>Type of publication</td>
<td>Article (peer-reviewed)</td>
</tr>
<tr>
<td>Access to the full text of the published version may require a subscription.</td>
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<tr>
<td>Item downloaded from</td>
<td><a href="http://hdl.handle.net/10468/94">http://hdl.handle.net/10468/94</a></td>
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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. The primary aims of this study were 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 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

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

Author: Ferry Ivan J, Collins A, Colwell M, Creagh D, Drew C, Hinchion Rita, Meillon S, O'Maillion I, David

Abstract
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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 this age group (50-69 years). Risk scores, which have generally been based on the Framingham risk equation (10.9%), are commonly 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.

The prevalence of Type 2 DM and Impaired Fasting Glucose (IFG) was estimated by measurement of fasting plasma glucose, of whom 38% of these individuals were known to be hypertensive. Eighty per cent of the population sample had cholesterol concentration in excess of 5 mmol/l. Almost 4% of the population had Type 2 Diabetes Mellitus, of whom 39% had a history of either a stroke, peripheral vascular disease or abdominal aortic aneurysm or where there was evidence of a definite previous Myocardial Infarction (MI) on an analysis of the electrocardiographs (ECG) by an experienced cardiologist. Of the remaining 881 individuals in the primary prevention population, a total of 20 high-risk individuals (19 male) had a risk of a coronary heart disease event exceeding 20% according to the Framingham risk equation, giving an overall population prevalence of 2.0% (95% CI 1.3 - 3.0). At a risk level 20% over ten years, an additional 91 individuals (8.9%) were identified. Thus a total of 24.4% of the population sample were at high risk of CVD. The findings emphasise the need for urgent attention to the population level and the need to develop preventive strategies at both the clinical and societal level.

Introduction

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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 Cork and Kerry Diabetes and Heart Disease Study is the first study of its kind in Ireland to employ large-scale cardiovascular screening in primary care. The survey included measurement of blood pressure, weight and height, on the basis of pre-existing cardiovascular disease or as defined by the Framingham equation. 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 Cork and Kerry Diabetes and Heart Disease Study is the first study of its kind in Ireland to employ large-scale cardiovascular screening in primary care. The survey included measurement of blood pressure, weight and height.
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 smokers in this study was broadly similar to that observed in the age group 25−34 years. The proportion of smokers in the male population was 26.6%. In the female population, 21% were smokers. A total of 27.9 (s.d. 4.06) for men and 27.4 (s.d. 4.70) for women. The waist−to−hip ratio exceeded 0.9 in 88.4% of men aged 50−54, rising to 92.4 % of men aged 65−69; waist−to−hip ratio exceeded 0.85 in 54.8% of women aged 50−54, rising to 60.5% of women aged 65−69.

Participation in physical exercise was generally not high. A total of 40% of the study population reported being inactive or only occasionally active (Figure 2). In addition, a total of 192 individuals, 18.9% (95% CI 16.5 − 21.4) reported being physically inactive or only occasionally active. The principal risk factors employed by the population were waist−to−hip ratio, High Density Lipoprotein (HDL) cholesterol concentration, body mass index (BMI), smoking, waist−to−hip ratio (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.

Table 1 The percentage prevalence of each risk factor contained in the Framingham composite risk score, by age group and sex

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>50−54</td>
<td>88.8</td>
<td>85.3</td>
<td>87.1</td>
</tr>
<tr>
<td>55−64</td>
<td>81.9</td>
<td>75.5</td>
<td>78.7</td>
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<tr>
<td>60−64</td>
<td>64.8</td>
<td>55.5</td>
<td>59.5</td>
</tr>
<tr>
<td>65−69</td>
<td>54.4</td>
<td>44.4</td>
<td>49.4</td>
</tr>
<tr>
<td>All</td>
<td>68.6</td>
<td>62.8</td>
<td>65.7</td>
</tr>
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The prevalence rate for Type 2 Diabetes Mellitus was 3.9% (95% CI 2.9 − 5.4) and the prevalence rate was higher in males in the older age groups. One individual (Type 1 Diabetes Mellitus. Seventy percent of all diabetics (28/40) had already been diagnosed. The prevalence rate for Impaired Fasting Glucose (IFG) was 2.5% (95% CI 1.6 − 3.6). The prevalence rate was higher in males and in the older age groups. In males 65 years or older, over 13% had either Type 2 DM or IFG. The corresponding prevalence rate for women in this age group was 9%.

The prevalence rate for hypertension was 47% (480/1018). A total of 182 (38%) of these individuals had a documented history of hypertension and were on anti−hypertensive medication. Only 74 (41%) of individuals in this latter group had blood pressure readings below 140/90, the current target level recommended in international guidelines. 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 Rose questionnaire only 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 (Lipid lowering drug).

Of the 881 individuals in the primary prevention population, the Framingham risk equation identified 20 with a risk of a CHD event 30% over ten years, 19 of whom were obese, giving an overall population prevalence of 2.5% (95% CI 1.3−3.8). Considering a lower risk threshold of 20% over 10 years, 10.9% of the population would be considered to be at high absolute risk of a CHD event, in addition to the 13.5% with pre-existing CVD. Lowering the risk threshold further, to 15% over 10 years, would include an additional 10% of the population (Figure 3).

Discussion

The burden of cardiovascular disease in Irish society is reflected in the high prevalence rates of common CVD risk factors observed in this study. Almost half of the participants were overweight and one in four was obese. Forty percent of the population reported having no physical exercise or only occasional physical exercise on a weekly basis. The prevalence of obesity in this study is higher than that reported in the 1985 Kilkenny Health Project population survey and is one of the highest reported in a European population sample. The Kilkenny Health Project has reported findings from a random population sample of 784 men and women aged 35 to 64 years. The mean BMI in the Kilkenny study (in those aged 55−64 years) was 26.7 kg/m² in men and 25.9 kg/m² in women, as compared with 28.4 kg/m² in men and 27.3 kg/m² in women in the same age group in the present study. The prevalence of obesity in the Kilkenny study was 13.7% in men and 19.0% in women, a lower prevalence than in the current study, even allowing for the different age profile of the two samples.

The 1998 National Health and Lifestyle Surveys (SLAN) carried out in the Republic of Ireland estimated that, in the 50−69 age−group, 41% of this population were overweight and 15% were obese, compared with 47% and 26% respectively in the Cork and Kerry study. The SLAN study figures quoted here are based on a national postal survey with self−reported height and weight. The high proportion of overweight and obese individuals in the Irish population is similar to findings in other countries.

The high proportion of this population with hypertension and the estimated numbers with undiagnosed and inadequately treated hypertension is in keeping with previously reported surveys on the detection and management of hypertension. There is potential for significant improvements in this area.

A total of 3.9% of the population sample had Type 2 Diabetes Mellitus. The prevalence rate for Type 2 DM in this study is higher than that observed in a random population sample of 784 men and women aged 35 to 64 years. The mean BMI in the Kilkenny study (in those aged 55−64 years) was 26.7 kg/m² in men and 25.9 kg/m² in women, as compared with 28.4 kg/m² in men and 27.3 kg/m² in women in the same age group in the present study. The prevalence of obesity in the Kilkenny study was 13.7% in men and 19.0% in women, a lower prevalence than in the current study, even allowing for the different age profile of the two samples.

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Lack of physical exercise is a significant factor in the increasing prevalence of both obesity and Type 2 DM. The prevalence of smoking in this study (18.9%) is lower than that reported from the SLAN survey (25%), a difference which may reflect the different sampling strategies in the two surveys. The SLAN study figures quoted here are based on a national postal survey with self−reported height and weight. The high proportion of overweight and obese individuals in the Irish population is similar to findings in other countries.

About 82% of the study population had a high total cholesterol concentration (5 mmol/l) and 75% a high Low Density Lipoprotein (LDL) cholesterol concentration. It is interesting to note that while mean total cholesterol concentration is in keeping with rates from cross−sectional surveys and national health data interviews from the UK and the US, the 1998 National Health and Lifestyle Surveys (SLAN) carried out in the Republic of Ireland estimated that, in the 50−69 age−group, 41% of this population were overweight and 15% were obese, compared with 47% and 26% respectively in the Cork and Kerry study. The SLAN study figures quoted here are based on a national postal survey with self−reported height and weight. The high proportion of overweight and obese individuals in the Irish population is similar to findings in other countries.
In addition to those with pre-existing CVD, a further 2% of the population was deemed to be at high risk for cardiovascular disease: the prospective phase of the British Regional Heart Study. J Epidemiol Community Health 1991;45(3):197-205.


References: No References

Comments: No Comments

Acknowledgements: No Acknowledgement