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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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<tbody>
<tr>
<td>Authors</td>
<td>Perry, Ivan J.; Collins, A.; Colwell, N.; Creagh, D.; Drew, C.; Hinchion, Rita; O’Halloran, T. David</td>
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</table>
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 current recommendations from international guidelines.

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. In total, 1,695 people attended the screening in 15 practices in Co. Cork and two in Co. Kerry.

To ensure standardisation, all procedures were carried out with reference to the detailed guidelines contained in the study's "Standard Operating Procedures Manual" and all results were recorded on a standard "Clinical Report Form". The prevalence of Type 2 DM and Impaired Fasting Glucose (IFG) was estimated by measurement of fasting plasma glucose, using the revised diagnostic criteria of the American Diabetes Association (ADA) (2) and the World Health Organisation (WHO) (3) for use in epidemiological studies of diabetes prevalence.

Subjects were overweight with a Body Mass Index (BMI = weight in kg/height in m2) between 25 kg/m2 and 29.9 kg/m2 and to have normal or reduced physical activity (2) plus (5-1 or 5-2), using the antero-lateral leads, to define definite left ventricular hypertrophy (LVH). The proportion of the population at high risk of a first coronary heart disease event was estimated using the Framingham risk equations (12) which incorporate and allow for the relative impact of the common variables which contribute to this risk. The effect of lowering this "high-risk" threshold to 15% over 10 years was also examined.

Results

In the overall study population 42.8% of all participants were men, the mean age was 58 years. Almost half the participants were overweight and a further quarter met current international criteria for obesity. Almost half the participants had high blood pressure, 12.5% had diabetes mellitus, 3.4% had type 2 diabetes mellitus, almost half the participants had high total cholesterol or low HDL cholesterol, 5.7% had high C-reactive protein, 5% were current cigarette smokers and 19% reported no physical activity.

Overweight prevalence was 45.8% while obesity prevalence was 27.6%. Of the 1018 of the 1473 who were invited to participate attended for the assessment, a response rate of 69.1%. Allowing for non-responders, who could not attend for reasons of being hospitalised (N=55) out of the country (N=5), no longer alive (N=2), too confused (N=1) and untraceable (N=2), the effective response rate was 1018/1459 = 69.1%. Candidates were invited by letter, co-signed by their participating GP, explaining the aims of the study and accompanied by a reply slip and detailed questionnaire. Non-responders were followed up with a phone call where possible and otherwise with a single postal reminder.

Acknowledgements

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References

Framingham risk score, including cholesterol levels, are documented by age group and sex in Table 1. 44 (4.3%) had High Density Lipoprotein (HDL) cholesterol concentrations below 0.9 mmol/l (men) or 1.0 mmol/l (women). The mean total cholesterol concentration exceeded 5 mmol/l in a total of 836 individuals (82.2%). In 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 5 mmol/l in a total of 836 individuals (82.2%). In excess of 70% of men and in excess of 80% of women in all four strata had total cholesterol concentrations 5.0 mmol/l. In addition, 75% (74.6%) had a Low-Density Lipoprotein (LDL) cholesterol concentration greater than 3.0 mmol/l, 44% 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.

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>50-54</th>
<th>55-59</th>
<th>60-64</th>
<th>65-69</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waist:Hip ratio &gt; 0.9 (men)</td>
<td>88.8</td>
<td>85.3</td>
<td>82.7</td>
<td>82.4</td>
<td>85.8</td>
</tr>
<tr>
<td>Waist:Hip ratio &gt; 0.85 (women)</td>
<td>68.8</td>
<td>75.5</td>
<td>74.1</td>
<td>74.5</td>
<td>76.2</td>
</tr>
<tr>
<td>Smoker m</td>
<td>24.1</td>
<td>31.4</td>
<td>9.8</td>
<td>18.3</td>
<td>20.9</td>
</tr>
<tr>
<td>Smoker f</td>
<td>21.1</td>
<td>31.3</td>
<td>12.1</td>
<td>17.1</td>
<td>15.8</td>
</tr>
<tr>
<td>Hypertension m</td>
<td>72.5</td>
<td>57.8</td>
<td>69.1</td>
<td>75.6</td>
<td>70.6</td>
</tr>
<tr>
<td>Hypertension f</td>
<td>57.4</td>
<td>46.6</td>
<td>57.0</td>
<td>64.4</td>
<td>60.7</td>
</tr>
<tr>
<td>History of CVD m</td>
<td>3.1</td>
<td>1.6</td>
<td>0.9</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>History of CVD f</td>
<td>2.6</td>
<td>3.0</td>
<td>3.0</td>
<td>3.1</td>
<td>3.0</td>
</tr>
</tbody>
</table>

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 than females (Table 1). Twenty percent of the study population were overweight while 26% of the female population and 25% of the male population were obese. The proportion of the 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. A total of 114 of these individuals reported a history of CVD, a further 11 were detected using the two samples. In the Kilkenny Health Project, the smoking prevalence was 27.8% in men and 27.1% in women. 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 had 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 overall 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 year 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. 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 account for the lower prevalence of obesity in the two surveys. In the Kilkenny Health Project, the smoking prevalence was 27.8% in men and 27.1% in women. 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. 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 lower in both the men and women when compared to findings from the 55–65 year age group in the Kilkenny Health Project this has occurred against a background of increasing obesity. 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 in keeping with previous studies and national health data surveys from the UK and the US. In the US there has been a 33% increase in diagnosed diabetes from 1991 to 1998 and this increase is highly correlated with the increasing prevalence of obesity. Consistent with the high prevalence of CVD risk factors in this sample, over 13% of the middle-aged population of males and females have evidence of established cardiovascular disease. While there is widespread consensus on optimal management of those with pre-existing CVD, it has been documented repeatedly that management of such individuals is generally poor. This has been reflected in the findings in this study of poor control of lipids and blood pressure in the two samples. 

In estimating an individual’s risk of CVD, it is necessary to consider all the factors that might contribute to this risk rather than looking at a single risk factor in isolation. The use of composite risk scores ensures that those at high absolute risk are targeted for intervention, thus maximising the benefit of relative risk reduction.
In addition to those with pre-existing CVD, a further 2% of the population was deemed to have a first Coronary Heart Disease event 30% over 10 years using the Framingham risk equation. The absolute numbers 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, 10.9% 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. 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 ensure that individuals are referred to appropriate health services with an absolute risk of a first CHD event of 30% or over 10 years.

The fact that one-quarter of the middle-aged population might be considered 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 reduce the prevalence of coronary risk factors. Further programmes to promote smoking cessation, increased levels of physical activity and a healthier diet 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 epidemics. The real challenge is that we face is to translate this knowledge into effective policies, acting at both the individual and societal level.

Acknowledgements

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References

18. Travis S and Nic Ghadhain S. The National Health and lifestyle Survey - Regional results from the Survey of Lifestyle, Attitudes and Nutrition. 1995, Health Promotion Unit, Department of Health and Children, Dublin and Centre for Health Promotion Studies, National University of Ireland, Galway.