ABSTRACT

Research has found that cardiovascular disease (CVD) is the leading cause of mortality in on-duty firefighters. The purpose of this study was to estimate the prevalence of cardiac health and 10-year risk of ASCVD in Colorado male and female firefighters using Pooled Cohort risk equations. Our results indicate that about one in five of the sampled Colorado firefighters have predicted ASCVD risk of ≥5% and 8% have risk of ≥10%. The high percentage of predicted ASCVD risk suggests that primary and secondary prevention should be emphasized among firefighters with high risk of ASCVD.

INTRODUCTION

• Cardiovascular disease (CVD) is the leading cause of mortality in on-duty firefighters.
• The screening of Metabolic syndrome (MetS) and the assessment of atherosclerotic cardiovascular disease (ASCVD) is important in the prevention of CVD and heart attack and stroke.
• Pooled Cohort risk equations estimate the 10-year risk of ASCVD among patients with no clinical ASCVD or diabetes.
• This assessment can help guide practitioners’ decisions to initiate statin therapy for primary prevention.

STUDY PURPOSE

To estimate the prevalence of cardiac health and 10-year risk of ASCVD in Colorado male and female firefighters using Pooled Cohort risk equations.

DATA SOURCES & PARTICIPANTS

• 275 Caucasian male and 24 Caucasian female Colorado firefighters aged 40 years and older from (see table 1).
• The data were from The Heart Disease Prevention Program (HDPP) which is an outreach program in the Human Performance Clinical/Research Laboratory (HPCRL) at the Colorado State University which provides cardiovascular disease risk factor screening.

MEASURES

 METs: Metabolic syndrome (MetS) was classified as having ≥3 metabolic abnormalities (including elevated triglycerides, low high-density lipoprotein, elevated blood pressure, increased waist circumference, and elevated fasting blood glucose) using Cholesterol Education Program/Adult Treatment Panel III guidelines.

10-year ASCVD risk: Calculated using pooled cohort risk equations. Participants were categorized into groups with 5%, 7.5% and 10% as cut points according to their 10-year risk of ASCVD.

STATISTICAL ANALYSIS

Out of the total of 299 firefighters, 18.1% had a 10-year ASCVD risk of ≥ 5% (8.3% female [N = 2] and 18.9% male [N = 52]), and 8% (N = 24) had a 10-year ASCVD risk of ≥10%. Chi-square tests show that MetS and age are significantly associated with 10-year risk of ASCVD. Specifically, older firefighters and firefighters with MetS were more likely to have greater 10-year ASCVD risk (Chi-square = 39.09, df = 9, p<.001) (see table 2). In firefighters who had MetS, 43.4% had a 10-year ASCVD risk of ≥5% while among those without MetS, only 12.6% had 10-year ASCVD risk of ≥5% (Chi-square = 39.58, df = 3, p<.001) (see table 3).

RESULTS

Table 1: Prevalence of CVD risk factors among Colorado firefighters

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetS</td>
<td>8.9%</td>
<td>0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Age</td>
<td>39.4%</td>
<td>56.7%</td>
<td>43.4%</td>
</tr>
</tbody>
</table>
| Sex | 58% | 42% | 55%

Table 2: Comparison of ASCVD risk between groups

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>%</th>
<th>Chi-Square</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>245</td>
<td>81.9%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MetS</td>
<td>22</td>
<td>91.6%</td>
<td>4.48</td>
<td>2.83</td>
</tr>
<tr>
<td>Age</td>
<td>39.4%</td>
<td>10</td>
<td>3.5</td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSION

About one in five of the sampled Colorado firefighters have predicted ASCVD risk of ≥ 5% and 8% have risk of ≥10%. A previous variation study published in JAMA indicated that the observed 5-year ASCVD incidence per 1000 person-years for individuals with a 10-year predicted ASCVD risk of 5% to less than 7.5% was 4.8 and risk of 10% or greater was 12.0. Therefore, the percentages of predicted ASCVD risk in this study suggests that primary and secondary prevention should be emphasized among firefighters given that they are at high risk of on-duty mortality. A longitudinal study will be conducted to follow these firefighters for incidence of CVD.

References