Alcohol Associated Deaths in British Soldiers

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SUMMARY: In the decade 1968–77, 203 (12%) of the 1723 deaths in off duty British Army males were associated with a blood alcohol concentration (BAC) in excess of 80 mgs/100 mls. These deaths occurred in road traffic accidents (49%), acute alcohol poisoning (23%), suicide (9%), drowning (8%), falling from a height (7%), burns (3%), and interpersonal violence (1%). The mean BAC was similar in all of these categories (180 mgs/100 mls) except in acute alcohol poisoning where it was double this figure. The mean age at death was similar, approximately 24 years, for all categories except suicide, where it was 28 years. The mean age at death of those with raised alcohol levels was not significantly different from that of the total number in the same group. Alcohol associated death is generally more common abroad than in the United Kingdom, with the notable exception that, in the British Army of the Rhine (BAOR), the incidence of alcohol associated road traffic deaths is no higher than that in the United Kingdom. BAC above 80 mgs % is much less common in soldiers whose deaths occur on duty (1.6%).

Introduction
In the climate of increasing concern about alcohol consumption in the Army, the promulgation of counter measures and the assessment of their success is hampered by the lack of basic epidemiological data on the subject. This paper provides some such data on alcohol associated deaths in the decade 1968–77.

Methods
The total number of deaths in the decade 1968–77 both on and off duty of British Army males (thus excluding the Brigade of Gurkhas and the Women's services) as recorded by Stats (G)4, 2401, was confirmed as accurate by reference to the Casualty List held centrally in the Ministry of Defence. Thereafter, a clear statement in every case of whether or not the soldier was on duty at the time of demise allowed an accurate figure for the total of deaths occurring off duty. There were 1723 such deaths and the Central Medical Envelope (F Med 29) of all but 20 of these was examined for evidence of blood alcohol concentration (BAC) having been estimated post mortem. BAC estimations were found to have been carried out in only six categories of demise (Table 1). Of the 931 deaths in these categories, BAC

Table 1
Alcohol associated deaths in off duty British Army males 1968–77

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Total Deaths No</th>
<th>Age at Death Years</th>
<th>No of BAC(^1) Estimations (% of Total)</th>
<th>No with BAC &gt; 80 mgs % (% of tested)</th>
<th>BAC Level in those &gt; 80 mgs % mgs</th>
<th>Age at death with BAC &gt; 80 mgs % Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Alcohol Poisoning(^2)</td>
<td>46</td>
<td>24±6</td>
<td>35 (76%)</td>
<td>35 (100%)</td>
<td>370±106</td>
<td>24±6</td>
</tr>
<tr>
<td>Road Traffic Accidents</td>
<td>596</td>
<td>24±7</td>
<td>181 (30%)</td>
<td>99 (55%)</td>
<td>184±79</td>
<td>25±6</td>
</tr>
<tr>
<td>Suicide</td>
<td>121</td>
<td>28±9</td>
<td>43 (35%)</td>
<td>18 (42%)</td>
<td>161±62</td>
<td>28±9</td>
</tr>
<tr>
<td>Drowning</td>
<td>65</td>
<td>24±7</td>
<td>20 (31%)</td>
<td>16 (80%)</td>
<td>191±57</td>
<td>24±7</td>
</tr>
<tr>
<td>Falls</td>
<td>65</td>
<td>23±7</td>
<td>19 (29%)</td>
<td>15 (79%)</td>
<td>196±69</td>
<td>21±5</td>
</tr>
<tr>
<td>Brawling</td>
<td>25</td>
<td>24±6</td>
<td>4 (16%)</td>
<td>3 (75%)</td>
<td>164±79</td>
<td>23±2</td>
</tr>
<tr>
<td>Burns</td>
<td>13</td>
<td>23±3</td>
<td>6 (46%)</td>
<td>6 (100%)</td>
<td>194±63</td>
<td>24±2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>931</td>
<td>24±6</td>
<td>311 (33%)</td>
<td>203 (65%)</td>
<td>196±70</td>
<td>24±6</td>
</tr>
</tbody>
</table>

\(^1\)BAC – blood alcohol concentration.
\(^2\)In all cases the diagnosis of acute alcohol poisoning was made or confirmed at autopsy. BAC was not, however, recorded in every case.

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Table 2
Mean annual mortality rates worldwide per 100,000 British Army males who died with BAC in excess of 80 mgs/100 mls in the decade 1968/77

<table>
<thead>
<tr>
<th>Category</th>
<th>Army Rate</th>
<th>UK Rate</th>
<th>BAOR Rate</th>
<th>Elsewhere Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Alcohol Poisoning</td>
<td>2.73</td>
<td>1.23</td>
<td>5.10</td>
<td>4.76</td>
</tr>
<tr>
<td>Road Traffic Accidents</td>
<td>6.00</td>
<td>5.94</td>
<td>5.83</td>
<td>7.14</td>
</tr>
<tr>
<td>Suicide</td>
<td>1.09</td>
<td>0.72</td>
<td>1.82</td>
<td>0.79</td>
</tr>
<tr>
<td>Drowning</td>
<td>0.97</td>
<td>0.51</td>
<td>1.46</td>
<td>2.38</td>
</tr>
<tr>
<td>Falls</td>
<td>0.90</td>
<td>0.41</td>
<td>0.91</td>
<td>4.76</td>
</tr>
<tr>
<td>Brawling</td>
<td>0.18</td>
<td>0.20</td>
<td>0.18</td>
<td>0</td>
</tr>
<tr>
<td>Burns</td>
<td>0.36</td>
<td>0.31</td>
<td>0.55</td>
<td>0</td>
</tr>
<tr>
<td>All Alcohol Associated Deaths</td>
<td>12.36</td>
<td>9.38</td>
<td>15.82</td>
<td>19.23</td>
</tr>
</tbody>
</table>

*Figures in brackets denote total numbers of deaths in the decade.

Estimations were carried out in 30%. Gas chromatography was the method of estimation in the vast majority. In two cases of sea drowning BAC was estimated many weeks after demise. The results (113 mgs/100 mls, 250 mgs/100 mls) were still taken as relevant. Estimations on fluids other than peripheral blood (three estimations were carried out on urine only, two on intracardiac blood, and one on aqueous humour) were also accepted. The F Med 29s of all 678 fatalities occurring on duty were examined in the same way.

Results

Of the 1723 off-duty deaths in the decade 1968–77, 203 (12%) had BAC in excess of 80 mgs/100 mls. These deaths occurred in road traffic accidents (49%), acute alcohol poisoning (23%), suicide (9%), drowning (8%), falling from a height (7%), burns (3%), and interpersonal violence (1%) (Table 1). The mean BAC was similar in all categories of death (180 mgs/100 mls) except in acute alcohol poisoning, where it was double this figure. The mean age of death, 24 years, was similar in all categories except suicide, where it was 28 years. The mean age at death of those with raised alcohol levels was not significantly different from that of the total number in the same group.

The annual incidence of alcohol associated deaths off duty is 12.36 per 100,000. Table 2 compares the incidence in the United Kingdom, Northwest Germany and elsewhere and shows that alcohol associated death is generally commoner outside the United Kingdom for all categories of death, with the notable exception of road traffic deaths in the British Army of the Rhine (BAOR).

Table 3 shows the trend of alcohol associated deaths in the decade and suggests that deaths from acute alcohol poisoning increased in the latter half of the decade but that the number of road traffic deaths remained constant.

These figures pertain only to deaths occurring off duty. 25% of the 678 soldiers killed in military accidents or by enemy action had BAC estimations carried out, and of these 6.4% of the sample had levels in excess of 80 mgs/100 mls (Table 4).

Discussion

Obviously the validity of the results is tempered by the fact that BAC were recorded in only 30% of cases. Nevertheless, several valid statements can be made. The data on acute alcohol poisoning are likely to be accurate and, whatever the niceties of sampling, it is clear that at least a quarter of all deaths from drowning, and from falling from a height, occur at a time when the victim’s BAC is approaching 200 mgs/100 mls. Similarly, a minimum figure of nearly half of all deaths from burning occur when the victim’s blood alcohol is similarly elevated.

With regard to road traffic deaths, the 30% sample obtaining here is similar to that available to the Department of Transport in compiling the national figures. However, no valid comparison can be made with the civilian figures until age and type of road user are specified.
With alcohol available more cheaply abroad it is perhaps not surprising that alcohol associated deaths are more common. The fact that alcohol associated road traffic deaths in BAOR are not more common than in the United Kingdom is striking, not only from the cheap alcohol point of view, but also because German traffic conditions are different and soldiers travel more by car. It may be that the drinking and driving measures adopted by the military authorities in Germany are having some effect.

Death from acute alcohol poisoning usually occurs in relation to a “birthday drink” of a large volume of spirits, and may be on the increase. It should be preventable.

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