

LETTER TO THE EDITORS

SELF-ESTIMATES OF BLOOD-ALCOHOL CONCENTRATION AND ABILITY TO DRIVE IN A POPULATION OF SOLDIERS

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Drink-driving remains a major problem of public health (Alvarez and Del Rio, 1996). One of the most controversial issues is the choice of legal limit, as the ability to drive can be affected by alcohol levels well below current legal limits (Dunbar *et al.*, 1987; Howat *et al.*, 1991; Guppy, 1994). This study addressed the questions of the self-estimation of ability to drive, and its correlation with blood-alcohol concentration (BAC) measured with a breath-ethanol analyser in a population of non-professional male soldiers.

In November 1997, at 23:00, during the last evening of a 3-week military course, in Geneva barracks, soldiers were asked to fill in a questionnaire including birth date, CAGE test, self-evaluation of ability to drive, and self-estimation of BAC. All gave informed consent and were instructed that the legal Swiss drink-drive limit is 0.8 mg/ml (80 mg/dl). BAC was measured after the completion of the questionnaire with a Lion Alcometer SD 400™ breath-ethanol analyser. Although the gold standard for alcohol determination should be a blood testing, we decided to use a breath-ethanol analyser, as it is accepted as a reliable screening method by police authorities.

Fifty-three out of 73 men (73%) were included (15 men were sleeping and 5 were working and therefore could not participate). All had a driving licence. Median age was 28 years (range: 21 to 41 years). Forty-one were ordinary soldiers, nine under-officers, and three officers. Forty-five subjects (85%) admitted having consumed alcohol at the time of completing the questionnaire. The CAGE test was positive (≥ 2 points) in three subjects, all of whom had consumed alcohol at the time of the investigation. Among the alcohol consumers, median (range) self-estimated BAC was 0.8 mg/ml (0.1 to 1.8), and median measured BAC was 0.3 mg/ml (0 to 1.5) ($P < 0.001$, Wilcoxon signed ranks test). Six men had measured BAC higher than 0.8 mg/ml. Ability to drive estimations relative to BAC are reported in Table 1, from which three points arise.

First, in this population of soldiers the prevalence of alcohol consumption during that particular day was high (85%), probably because this investigation was performed during the final evening of the military course, when soldiers traditionally drink more than usual. Moreover, Swiss biennial military courses are traditional occasions for high alcohol consumption, and 20 soldiers working or sleeping were not evaluated.

Table 1. Comparison of self-estimated ability to drive with estimated and measured blood-alcohol concentration (BAC) in 45 soldiers who admitted to alcohol consumption

BAC	Self-estimation of ability to drive	
	No. of subjects able to drive ($n = 27$)	No. of subjects unable to drive ($n = 18$)
Self-estimated		
<0.5 mg/ml	10	0
0.5–0.79 mg/ml	8	2
≥ 0.8 mg/ml	9	16
Measured		
<0.5 mg/ml	21	7
0.5–0.79 mg/ml	5	6
≥ 0.8 mg/ml	1	5

Second, self-reported BAC was always overestimated, when compared to measured BAC, probably because the questionnaire was performed in the early elimination phase of alcohol (Seidl *et al.*, 1996).

Third, according to other studies (Sharman *et al.*, 1978; Beirness, 1987), self-estimation of ability to drive correlated with neither estimated, nor measured, BAC. Nine out of 25 (36%) subjects estimating their BAC to be above 0.8 mg/ml declared themselves to be able to drive, which meant that they were liable to break the drink-driving law in Switzerland. Conversely, 13 out of 18 (72%) who declared themselves to be unable to drive would have been allowed to according to the Swiss law.

In conclusion, most of these intoxicated soldiers (72%) would not have been committing an offence according to Swiss law, although they felt unfit to drive. With a legal drink-drive limit of 0.5 mg/ml (50 mg/dl), this proportion would have been reduced by half (39%). Although no test of competence to drive was administered in this study, the data presented do raise concerns about the relationship between perceived levels of intoxication and inability to drive and blood-alcohol level. This suggests that Swiss authorities and other countries in which the legal drink-drive limit is 0.8 mg/ml (80 mg/dl) should rethink their drink-drive policy. One suggestion is the harmonization of a maximum BAC at 0.5 mg/ml (50 mg/dl) throughout the European countries (European Transport Safety Council, 1995).

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