

Citation:

Bedford D, O'Farrell A, Howell F. Blood alcohol levels in persons who died from accidents and suicide. *Ir Med J*. 2006 Mar;99(3):80-3.

PubMed ID: [16700260](#)

Study Design:

Retrospective Cohort Study

Class:

B - [Click here](#) for explanation of classification scheme.

Research Design and Implementation Rating:

NEUTRAL: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To identify the blood alcohol concentrations in persons who died as a result of accidental death (including accidents on the roads, at home and at work) or suicide.

Inclusion Criteria:

All cases where the person died as a result of injury or suicide in 2001 and 2002 were included.

Exclusion Criteria:

- Deaths which were not considered to be accidental, suicide or injury in nature were not included in the study
- Deaths considered to be unlawful killings or murder (based on the coroner's records) were also excluded

Description of Study Protocol:**Recruitment**

Retrospective review of coroner's records to identify blood alcohol concentrations in three counties in Ireland (Cavan, Monaghan and Louth) in 2001 and 2002.

Design: Retrospective cohort study

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

- Data was collated and analyzed using JMP and STATA

- Percentages, medians and means were calculated
- Statistical significance was assessed by using Chi-square test or the Fisher's exact test
- Where appropriate, multivariate analysis was also carried out to calculate odds ratios

Data Collection Summary:

Timing of Measurements

- Retrospective review of coroner's records to identify blood alcohol concentrations in three counties in Ireland (Cavan, Monaghan and Louth) in 2001 and 2002.
- Data on age, gender, marital status, occupation, blood alcohol concentrations and date and time of death were collected

Dependent Variables

- Death from accidents and suicide

Independent Variables

- Blood alcohol concentrations
- All blood samples were taken at the post-mortem examination

Control Variables

Description of Actual Data Sample:

Initial N: Number of coroner's records reviewed not described. 129 death eligible for inclusion, 98, were male (76%)

Attrition (final N): 105 (81.3%) deaths were tested.

Age: 87.5% were 18 years old and over

Ethnicity: not described

Other relevant demographics:

Anthropometrics:

Location: Three counties in Ireland (Cavan, Monaghan and Louth)

Summary of Results:

Key Findings

- Of the 129 deaths, 55 (42.6%) were road traffic accidents, 31 (24.0%) were suicides, 12 (9.3%) were substance misuse, 11 (8.5%) were house fires, 7 (5.4%) were industrial and farm accidents and 13 (10.1%) others
- Blood alcohol levels were tested for 105 subjects (83%) of the study population, of whom 58 (55.2%) tested positive for alcohol
- Females were equally likely as males to have a positive blood alcohol concentration (60.8%)

vs 53.6%, $P = 0.63$).

- Of the 55 who died in road traffic accidents, 22 (40%) had positive blood alcohol concentrations ranging from 16 mg/100 ml to 325 mg/100 ml.
- Of the 25 drivers killed, 21 had blood alcohol concentrations recorded, of which 7 (33.3%) had alcohol detected in their blood, all of whom were male. BACs ranged from 26 to 257 mg/100 ml.
- Of the 20 passengers killed, six were children under 18 years (one of which had a blood alcohol concentration of 136 mg/100 ml) and of the remaining 14 passengers over age 18, 13 had blood alcohol concentrations recorded and 10 (76.9%) had alcohol detected in their blood. BACs ranged from 16 to 286 mg/100 ml.
- Of the 10 pedestrians killed, three were children under 18 years, of the seven adults, six had blood alcohol concentrations recorded and four had alcohol detected in their blood. BAC ranged from 72 to 325 mg/100 ml.
- Of the 31 who died as a result of suicide, 28 (90.3%) were male and blood alcohol concentrations were available for 29 (93.5%) of them
- Of these, 16 (55.5%) had alcohol detected with blood alcohol concentrations ranging from 13 mg/100 ml to 317 mg/100 ml.
- Persons aged less than 30 years were more likely to have alcohol in their blood ($P < 0.002$)
- The mean blood alcohol concentration for persons aged less than 30 was 191.5 mg/100 ml compared to 84.0 mg/100 ml for those aged 30 and over
- The mean blood alcohol concentration for adults who died in house fires was 225.2 mg/100 ml
- None of those who died as a result of an industrial or farming accident had alcohol detected in their blood
- The high blood alcohol concentrations in those who died as a result of suicide or injury reflect the high level of alcohol consumption and binge drinking in Ireland.
- Other accidental deaths results shows that of 36 adults, 31 had BAC recorded at post-mortem, 18 (58.1%) had alcohol detected in their blood. BAC ranged from 26 to 589 mg/100ml.

Author Conclusion:

This study has highlighted the huge contribution alcohol makes to accidental deaths and to suicides.

Reviewer Comments:

Review period only lasted 2 years, relatively small cohort size of 129 deaths. Number of coroner's records reviewed not described.

Research Design and Implementation Criteria Checklist: Primary Research

Relevance Questions

1. Would implementing the studied intervention or procedure (if found successful) result in improved outcomes for the patients/clients/population group? (Not Applicable for some epidemiological studies)

N/A

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| 2. | Did the authors study an outcome (dependent variable) or topic that the patients/clients/population group would care about? | Yes |
| 3. | Is the focus of the intervention or procedure (independent variable) or topic of study a common issue of concern to nutrition or dietetics practice? | Yes |
| 4. | Is the intervention or procedure feasible? (NA for some epidemiological studies) | Yes |

Validity Questions

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| 1. | Was the research question clearly stated? | Yes |
| 1.1. | Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified? | Yes |
| 1.2. | Was (were) the outcome(s) [dependent variable(s)] clearly indicated? | Yes |
| 1.3. | Were the target population and setting specified? | Yes |
| 2. | Was the selection of study subjects/patients free from bias? | ??? |
| 2.1. | Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study? | Yes |
| 2.2. | Were criteria applied equally to all study groups? | Yes |
| 2.3. | Were health, demographics, and other characteristics of subjects described? | No |
| 2.4. | Were the subjects/patients a representative sample of the relevant population? | ??? |
| 3. | Were study groups comparable? | N/A |
| 3.1. | Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT) | N/A |
| 3.2. | Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline? | N/A |
| 3.3. | Were concurrent controls used? (Concurrent preferred over historical controls.) | N/A |
| 3.4. | If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis? | N/A |

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| 3.5. | If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.) | N/A |
| 3.6. | If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")? | N/A |
| 4. | Was method of handling withdrawals described? | N/A |
| 4.1. | Were follow-up methods described and the same for all groups? | N/A |
| 4.2. | Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate) and/or response rate (cross-sectional studies) described for each group? (Follow up goal for a strong study is 80%.) | N/A |
| 4.3. | Were all enrolled subjects/patients (in the original sample) accounted for? | N/A |
| 4.4. | Were reasons for withdrawals similar across groups? | N/A |
| 4.5. | If diagnostic test, was decision to perform reference test not dependent on results of test under study? | N/A |
| 5. | Was blinding used to prevent introduction of bias? | N/A |
| 5.1. | In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate? | N/A |
| 5.2. | Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.) | N/A |
| 5.3. | In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded? | N/A |
| 5.4. | In case control study, was case definition explicit and case ascertainment not influenced by exposure status? | N/A |
| 5.5. | In diagnostic study, were test results blinded to patient history and other test results? | N/A |
| 6. | Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were intervening factors described? | ??? |
| 6.1. | In RCT or other intervention trial, were protocols described for all regimens studied? | N/A |
| 6.2. | In observational study, were interventions, study settings, and clinicians/provider described? | Yes |
| 6.3. | Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect? | ??? |
| 6.4. | Was the amount of exposure and, if relevant, subject/patient compliance measured? | N/A |

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| 6.5. | Were co-interventions (e.g., ancillary treatments, other therapies) described? | N/A |
| 6.6. | Were extra or unplanned treatments described? | N/A |
| 6.7. | Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups? | N/A |
| 6.8. | In diagnostic study, were details of test administration and replication sufficient? | N/A |
| 7. | Were outcomes clearly defined and the measurements valid and reliable? | Yes |
| 7.1. | Were primary and secondary endpoints described and relevant to the question? | Yes |
| 7.2. | Were nutrition measures appropriate to question and outcomes of concern? | Yes |
| 7.3. | Was the period of follow-up long enough for important outcome(s) to occur? | ??? |
| 7.4. | Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures? | Yes |
| 7.5. | Was the measurement of effect at an appropriate level of precision? | Yes |
| 7.6. | Were other factors accounted for (measured) that could affect outcomes? | Yes |
| 7.7. | Were the measurements conducted consistently across groups? | Yes |
| 8. | Was the statistical analysis appropriate for the study design and type of outcome indicators? | Yes |
| 8.1. | Were statistical analyses adequately described and the results reported appropriately? | Yes |
| 8.2. | Were correct statistical tests used and assumptions of test not violated? | Yes |
| 8.3. | Were statistics reported with levels of significance and/or confidence intervals? | Yes |
| 8.4. | Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)? | N/A |
| 8.5. | Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)? | ??? |
| 8.6. | Was clinical significance as well as statistical significance reported? | Yes |
| 8.7. | If negative findings, was a power calculation reported to address type 2 error? | N/A |
| 9. | Are conclusions supported by results with biases and limitations taken into consideration? | Yes |
| 9.1. | Is there a discussion of findings? | Yes |

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| 9.2. | Are biases and study limitations identified and discussed? | Yes |
| 10. | Is bias due to study's funding or sponsorship unlikely? | Yes |
| 10.1. | Were sources of funding and investigators' affiliations described? | Yes |
| 10.2. | Was the study free from apparent conflict of interest? | Yes |

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