

Citation:

Kool B, Ameratunga S, Robinson E, Crengle S, Jackson R. The contribution of alcohol to falls at home among working-aged adults. *Alcohol*. 2008 Aug;42(5):383-8. Epub 2008 Jun 17.

PubMed ID: [18562152](#)

Study Design:

Population-based Case-Control Study

Class:

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

Research Design and Implementation Rating:

NEUTRAL: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

This population-based case-control study examined the contribution of alcohol to fatal and hospitalized injuries due to unintentional falls at home among working-aged adults.

Inclusion Criteria:

- People aged 25-60 years
- All individuals who were admitted to the hospital or died as the result of non-occupational unintentional falls at home
- Auckland region of New Zealand
- Registered on the General or Māori electoral roll for the region

Exclusion Criteria:

- Non-English speaking people

Description of Study Protocol:**Recruitment**

- The cases included all individuals from the study base who were admitted to hospital or died as the result of non-occupational unintentional falls at home in the study region. Case finding and recruitment were undertaken prospectively through each of the three trauma admitting hospitals for the region and the Coroner's office.
- The control group comprised a random sample of people from the General and Māori electoral rolls in the region.

Design: Case-control study

All participants were interviewed by trained research interviewers using a standardized structured questionnaire.

Case interviews were conducted face-to-face in the hospital. Proxy interviews, usually with next-of-kin or close friend, were undertaken for cases who had died or who were too unwell to be interviewed.

Control interviews were conducted by telephone or face-to-face.

Blinding used (if applicable): not noted

Intervention (if applicable): not applicable

Statistical Analysis

- Odds ratios and confidence intervals (CIs) were calculated using unconditional logistic regression models.
- The inclusion of potential confounders in the multivariable model was assessed using Greenland's change in estimate model (Greenland, 1989).
- Population-attributable risks were calculated according to the methods developed by Walter for adjusted relative risks (Walter, 1978).

Data Collection Summary:

Timing of Measurements

Data was collected between July 2005 and July 2006.

Dependent Variables

- Moderate to serious injury fall: admitted to the hospital

Independent Variables

- Information on acute alcohol use: obtained by asking participants how many drinks they had consume in the 6 hours before the fall (cases) or index time (controls)
- Information on usual drinking patterns was ascertained using the Alcohol Use Disorders Identification Test (AUDIT).

Control Variables

- Information was also collected on: general health, physical activity, prescription medication use, lifestyle, and environmental risk factors that could potentially confound the association of alcohol with fall risk.
- Analysis also included data on the age, sex, ethnicity, BMI, socioeconomic status, living arrangements, and average hours spent at home awake during the week or weekend.

Description of Actual Data Sample:

Initial N: 344 eligible cases for study; 1,299 individuals randomly selected to take part as controls, 555 were eligible and contractable

Attrition (final N): 335 cases completed interviews; 352 controls were interviewed

Age, Ethnicity, Other Relevant Demographics and Anthropometrics:

Distribution of measures of alcohol consumption and confounding variables for case and control subjects

	Cases n=335 n(%)	Controls n=352 n(%)
Alcohol use in previous 6 h (drinks)		
0	240 (71.9)	327 (93.2)
1	13 (3.9)	12 (3.4)
2	16 (4.8)	5 (1.4)
≥ 3	65 (19.5)	7 (2.0)
Alcohol screen (AUDIT)		
Low risk (score 0-7)	243 (75.5)	301 (86.5)
Hazardous risk (score ≥8)	79 (24.5)	47 (13.5)
Age		
Mean in years (SD)	45.9 (SD 10.22)	44.6 (SD 9.36)
Median in years (interquartile range)	47 (39-54)	44 (36-51)
Gender		
Female	180 (53.7)	208 (59.1)
Male	155 (46.3)	144 (40.9)
Ethnicity		

NZ European	214 (63.9)	204 (58.0)
Māori	37 (11.0)	27 (7.7)
Pacific Islands	29 (8.7)	35 (9.9)
Other	55 (16.4)	86 (24.4)

AUDIT = Alcohol Use Disorders Identification Test.

Column totals could differ as a result of missing data

Location: Auckland region of New Zealand

Summary of Results:

Key Findings

- The consumption of two or more standard alcoholic drinks in the preceding 6 h relative to none was associated with a significantly increased risk of fall related injuring (for two standard drinks: odds ratio: 3.7, 95% CI 1.2-10.9); for three or more drinks: odds ratio: 12.9, 95% CI: 5.2-31.9)
- Approximately 20% of unintentional falls at home in this population may be attributable to the consumption of two or more alcoholic drinks in the preceding 6 h.

Association of self-reported alcohol variables with a moderate to serious injury fall

	Model 2 ^b ; multivariable model; adjusted OR (95% CI)
Alcohol use in preceding 6 h	
0	1.0
1	1.40 (0.58-3.34)
2	3.66 (1.23-10.85)
≥ 3	12.85 (5.19-31.82)
Alcohol screen (AUDIT)	
Low risk	1.0
Hazardous	0.90 (0.51-1.56)

Author Conclusion:

Drinking is strongly associated with unintentional falls at home that result in admission to hospital or death. Moreover, a substantial proportion of falls at home among working-age people can be attributed to alcohol consumption.

Reviewer Comments:

Cases and controls were not matched; but controls were from the same age band as the cases. Authors note that blood alcohol results were only available for cases; the lack of objective alcohol information for both case and control subjects is a weakness of the study. Research funded by Accident Compensation Corporation.

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
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)	N/A

Validity Questions

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?	Yes
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?	Yes

2.4.	Were the subjects/patients a representative sample of the relevant population?	Yes
3.	Were study groups comparable?	???
3.1.	Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT)	Yes
3.2.	Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline?	???
3.3.	Were concurrent controls used? (Concurrent preferred over historical controls.)	Yes
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
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.)	???
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?	Yes
4.1.	Were follow-up methods described and the same for all groups?	Yes
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%.)	Yes
4.3.	Were all enrolled subjects/patients (in the original sample) accounted for?	Yes
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?	Yes
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.)	Yes
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?	Yes
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?	Yes
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?	N/A
6.4.	Was the amount of exposure and, if relevant, subject/patient compliance measured?	N/A
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?	N/A
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)?	Yes
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
9.2.	Are biases and study limitations identified and discussed?	Yes
10.	Is bias due to study's funding or sponsorship unlikely?	???
10.1.	Were sources of funding and investigators' affiliations described?	Yes
10.2.	Was the study free from apparent conflict of interest?	???

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