

Citation:

Deng J, Zhou DH, Li J, Wang YJ, Gao C, Chen M. A 2-year follow-up study of alcohol consumption and risk of dementia. *Clin Neurol Neurosurg* 2006;108(4):378-383.

Worksheet created prior to Spring 2004 using earlier ADA research analysis template.

PubMed ID: [16084641](#)

Study Design:

Prospective 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:

The purpose of this study was to examine the relationship between alcohol intake and dementia and whether this association depended on age, gender, educational level or cigarette smoking.

Inclusion Criteria:

- Aged 60 years and older; and
- Living in the randomly selected communities of Gaoxing, Yubei and Yuzhong in Chongqing City, China.

Exclusion Criteria:

Exclusion criteria included the following:

- presented with concomitant neurological disorder potentially affecting cognitive function;
- presence of serious illness or severe hearing or visual impairment;
- persistent impairment of consciousness;
- presence of previous long-lasting mental retardation;
- without reliable information; and
- history of severe head trauma or neurosurgery.

Description of Study Protocol:**Recruitment**

Potential participants were enrolled from three areas in Chongqing City, China (Gaoxing, Yubei and Yuzhong). Six neighborhoods within these three districts were randomly selected.

Design: Prospective cohort study

Potential participants were examined at baseline for presence of dementia. Patients who were without diagnosed dementia, living, willing to participate and did not move were selected to participate. Selected participants were screened with a Mini-Mental State Examination (MMSE), examined for presence of other ailments and queried on their alcohol consumption.

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

- For univariate analysis, *t*-tests were performed for quantitative variables and chi-square tests for the categorical variables.
- Relative risk (RR) value is the ratio of incidence in the exposed population to that in the non-exposed population.
- RR and 95% confidence interval (CI) were calculated using χ^2 -test.
- Variables with statistical significance ($P < 0.05$) in univariate analysis were introduced in the logistic regression analysis.

Data Collection Summary:

Timing of Measurements

The following measurements were taken at baseline and the two-year follow-up:

- Dementia screening and diagnosis using Mini-Mental State Examination (MMSE);
- Presence of other conditions (Alzheimer's disease and vascular dementia according to internationally-accepted criteria, cerebrovascular disease by history of stroke, transient ischemic attack or evidence of brain lesions);
- Alcohol consumption frequency (never or occasionally, monthly, weekly or daily); and
- Type of alcohol consumed (beer, wine or liquor).

Dependent Variables

- Dementia: screening with MMSE, examination by neurologist and neuropsychological testing

Independent Variables

- Frequency of alcohol consumption: self-reported never or occasionally, monthly, weekly or daily)
- Quantity of alcohol consumed: beer, wine or liquor

Control Variables

- Age
- Gender
- Educational level
- Blood pressure
- Current smoking status
- History of stroke
- MMSE score

Description of Actual Data Sample:

Initial N: 2853 elderly people

Attrition (final N): 2632 (12 died, 157 refused to participate in follow-up, 52 moved away)

Age: 60 years and older

Ethnicity: Not given

Other relevant demographics

Anthropometrics: Not given

Location: Gaoxing area, Yubei area and Yuzhong area in Chongqing City, China

Summary of Results:

Key Findings:

- Light-to-moderate drinking was associated with a significantly lower risk of dementia compared with non-drinking
- Excessive drinking was related to a higher risk of dementia
- The effect of light-to-moderate drinking seemed most prominent among vascular dementia, 0.63 (0.55 - 0.72) for Alzheimer's disease, 0.31 (0.19 - 0.51) for vascular dementia and 0.45 (0.12 - 1.69) for other dementia

Other Findings:

At baseline:

- 41.2% were non-drinkers (N=1,084); non-drinkers were significantly older and more likely to be women
- 52.4% were light-to-moderate drinkers (N=1,381); light-to-moderate drinkers were better educated and were active smokers
- 6.3% (N=167) were excessive drinkers; excessive drinkers were found to have significantly higher blood pressure and more cases of stroke.

After adjusting for age, gender, blood pressure, current smoking status, history of stroke and MMSE score, the following was found at follow-up:

- Light-to-moderate intake of wine was related with a reduced risk of dementia compared to those who never drank wine.
- Light-to-moderate intake of liquor was related with a lower risk of dementia.
- Light-to-moderate intake of beer was associated with a significantly higher risk of dementia than those never drank beer.

Author Conclusion:

In conclusion, we found that light-to-moderate drinking was associated with a significantly lower risk of dementia compared with non-drinking. Excessive drinking was related to a higher risk of dementia. Light-to-moderate intake of beer was associated with a significantly higher risk of

dementia than non-drinking of beer. For wine, a significantly lower risk of dementia existed for light-to-moderate drinking.

Reviewer Comments:

Short follow-up duration of 2 years. Authors note that short follow-up period and limited number of dementia cases might restrict the power of the study.

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) | Yes |
| 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

- | | | |
|------|---|-----|
| 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? | Yes |

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?	Yes
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?	Yes
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?	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?	Yes
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?	No
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.)	No
5.3.	In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded?	No
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
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?	???
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)?	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?	Yes
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?	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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