

Clinical Question

- In middle aged women is alcohol consumption a risk factor for dementia?

Journal article

- Sabia Séverine, Fayosse Aurore, Dumurgier Julien, Dugravot Aline, Akbaraly Tasnime, Britton Annie et al. Alcohol consumption and risk of dementia: 23 year follow-up of Whitehall II cohort study BMJ 2018; 362 :k2927
- <https://www.bmj.com/content/362/bmj.k2927>

Background

- Study type = Cohort

Data are obtained from groups who have been exposed, or not exposed, to the new technology or factor of interest (eg from databases). No allocation of exposure is made by the researcher. Best for study the effect of predictive risk factors on an outcome.

(<https://www.cebm.net/2014/04/study-designs/>)

- The Whitehall II study was established to investigate the causes of social inequalities in health. A cohort of 10,308 participants aged 35-55, of whom 3,413 were women and 6,895 men, was recruited from the British Civil Service in 1985. Since this first wave of data collection, self-completion questionnaires and clinical data have been collected from the cohort every two to five years with a high level of participation. (<https://www.ucl.ac.uk/iehc/research/epidemiology-public-health/research/whitehallII/background>)

Q1. Did the study address a clearly focused issue?

A1. Yes

“To examine the association between alcohol and consumption and risk of dementia”

Population: Whitehall II Study cohort

Risk Factor: Dementia

Association of alcohol not stated as harmful or beneficial though

Q2. Was the cohort recruited in an acceptable way?

A2. Can't tell

Q3. Was the exposure accurately measured to minimise bias?

A3. No

Page 8 “The study findings need to be interpreted keeping in mind the observational nature of the data. A key limitation, as with other observational studies, is the measurement of alcohol consumption using self reports. It is possible that systematic reporting biases affected findings, although comparison of alcohol consumption reported by the participants of the Whitehall II study suggests patterns similar to other UK cohort studies”

Q4. Was the outcome accurately measured to minimise bias?

A4. Yes

Page 8 “The ascertainment of dementia based on linkage to electronic records has advantages and disadvantages. A recent study reported that passive assessment of dementia through UK hospital records has high specificity but modest sensitivity (78%) owing to milder cases of dementia being missing, as also found in the May Clinic Study of Aging and Adult Changes study. In addition to hospital records, we used other sources of dementia diagnosis. Accordingly, our analyse, which simulated differential misclassification scenarios show the results to be robust”

Q5a. Have the authors identified all important confounding factors?

A5a. No

Association between alcohol consumption and socialisation?

Q5b. Have they taken account of the confounding factors in the design and/or analysis?

A5b. Yes

Page 4 “In subsequent analyses we examined the mediating role of cardiometabolic disease (stroke, coronary heart disease, atrial fibrillation, heart failure, and diabetes) over the follow-up period in the association between alcohol consumption and risk of dementia”

“Models were first adjusted for health behaviours and finally for health status”

Q6a. Was the follow up of subjects complete enough?

A6a. Yes

Page 4 “Participants were censored at date of record of dementia, death or 31 March 2017, whichever came first”

Q6b. Was the follow up of subjects long enough?

A6b. Yes

Participants recruited in 1985-88.

Page 2 “Since baseline, follow-up clinical examinations have taken place about every four or five year, with each wave taking two years to complete; the last one was for 2015/16”

Follow up long enough for effects to reveal themselves

Hazard ratio

- A hazard ratio of 1 means lack of association,
- A hazard ratio greater than 1 suggests an increased risk
- A hazard ratio below 1 suggests a smaller risk

The 95% confidence interval tries to represent the reliable range of values in which we expect the true population parameter to be included.

Q7. What are the results of this study?

397 cases of dementia were recorded over a mean follow-up of 23 years.

Abstinence in midlife was associated with a higher risk of dementia (hazard ratio 1.47, 95% confidence interval 1.15 to 1.89) compared with consumption of 1-14 units/week.

Analysis using multistate models suggested that the excess risk of dementia associated with abstinence in midlife was partly explained by cardiometabolic disease over the follow-up as the hazard ratio of dementia in abstainers without cardiometabolic disease was 1.33 (0.88 to 2.02) compared with 1.47 (1.15 to 1.89) in the entire population.

Q8. How precise are the results?

The hazard ratio 1.47 for abstinence in midlife was associated with a higher risk of dementia compared with consumption of 1-14 units/week, has a confidence interval 1.15 to 1.89. The confidence interval is greater than 1 so confirms increased risk.

Cardiometabolic disease over the follow-up as the hazard ratio of dementia in abstainers without cardiometabolic disease was 1.33 (0.88 to 2.02). The confidence interval drops below 1 so this association is weaker.

Q9. Do you believe the results?

I want to believe the results on drinking in moderation.

I feel there may be confounding factors that haven't been captured in the Whitehall self-completion questionnaires, even though the analysis claims to take this into account.

Data on excessive alcohol consumption more compelling.

Q10. Can the results be applied to the local population?

Only 33% of the population studied was women. The clinical question was looking only at middle aged women so this paper could not be seen as strong evidence.

Q11. Do the results of this study fit with other available evidence?

Paper cites:

Xu W, Wang H, Wan Y, Tan C, Li J, Tan L, Yu JT. Alcohol consumption and dementia risk: a dose-response meta-analysis of prospective studies. *Eur J Epidemiol.* 2017 Jan;32(1):31-42. doi: 10.1007/s10654-017-0225-3. Epub 2017 Jan

This study concludes that light to moderate alcohol consumption is associated with a reduce risk of dementia, whereas both abstinence and heavy drinking are associated with a higher risk of dementia

Q12. What are the implications of this study for practice?

The results supported the recent downward revision of UK guidelines that moved the recommended alcohol consumption to 14 units/week in men compared with 21 units/week before, bringing them in line with women.