An association between patterns of alcohol consumption and cancer, cardiovascular diseases and all cause of death: 30 years follow-up prospective cohort study

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Overview

- Background
- Objectives
- Methods
- Results
- Discussion and conclusions

Background

Previous studies

- Studies investigated causal relationship between heavy drinkers and all cause of death and cancer are well-documented in high income countries, but evidence is **limited in low-and middle-income countries** (Licaj *et al*,2016 & Kunzmann et al, 2018 & Bagnardi *et al*, 2015).
- An association between alcohol consumption and CVDs **is contradict**; some studies found protective effective effect and some found negative effect (Roerecke & Rehm, 2017).
- In Thailand, Kamsa-ard *et al*, 2014 investigated association between alcohol consumption and cancer, cardiovascular diseases and all cause of death in Khon Kean, but **the study did not take into account changes of alcohol consumption over time** and **patterns of alcohol consumption**.

Contributions of present study

- Investigating causal relationship between patterns of alcohol consumption and all cause of death, cancer and CVDs in low- and middle- income country context

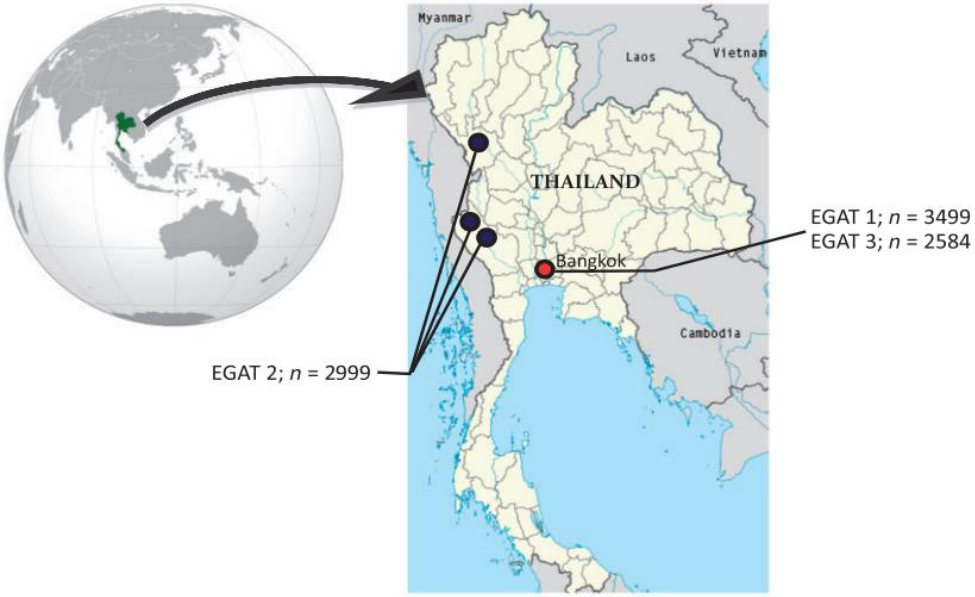
Objective

- To investigate associations between patterns of alcohol consumption and all cause of death, cancer and CVDs

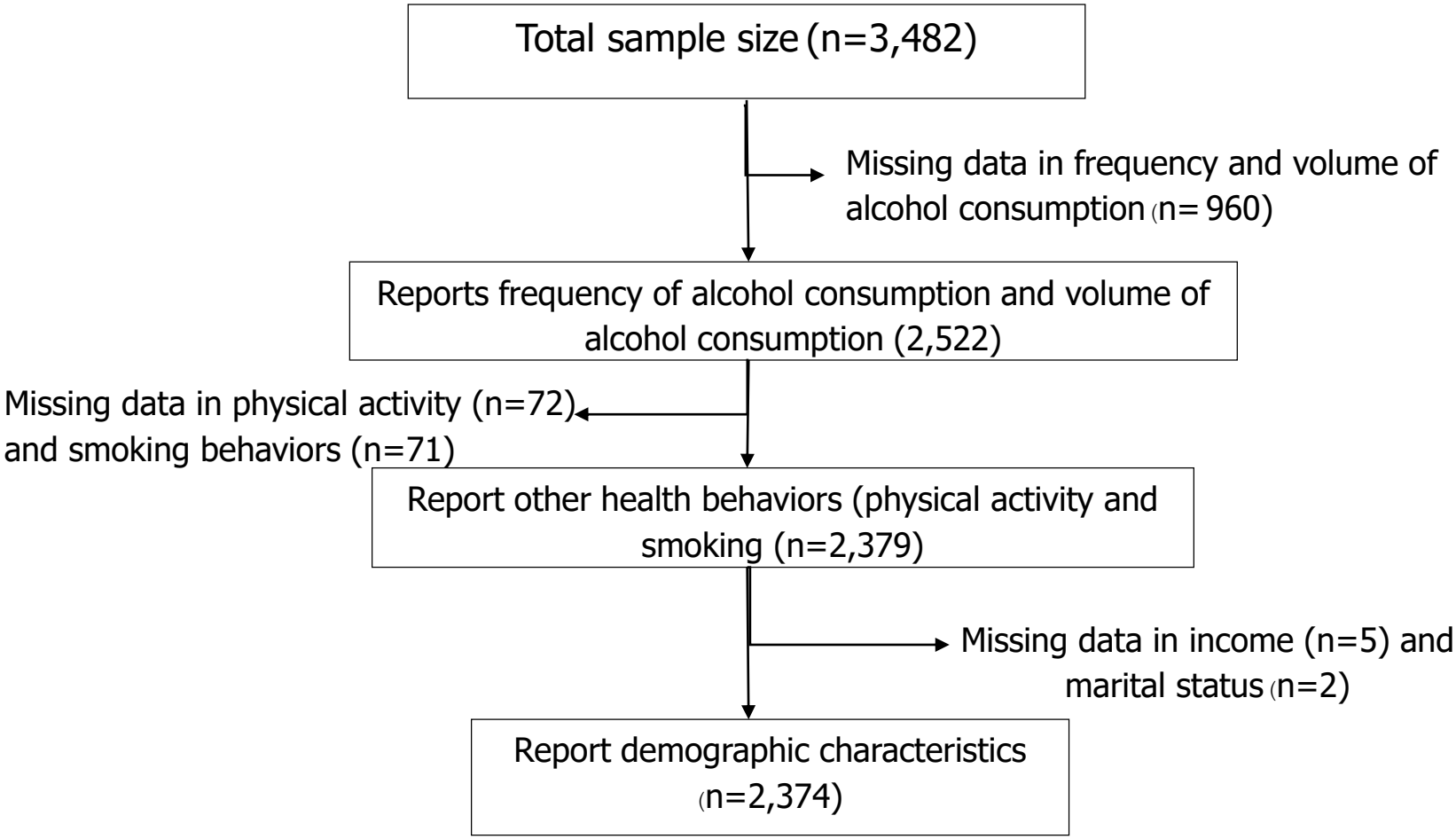
Methods

Data sources

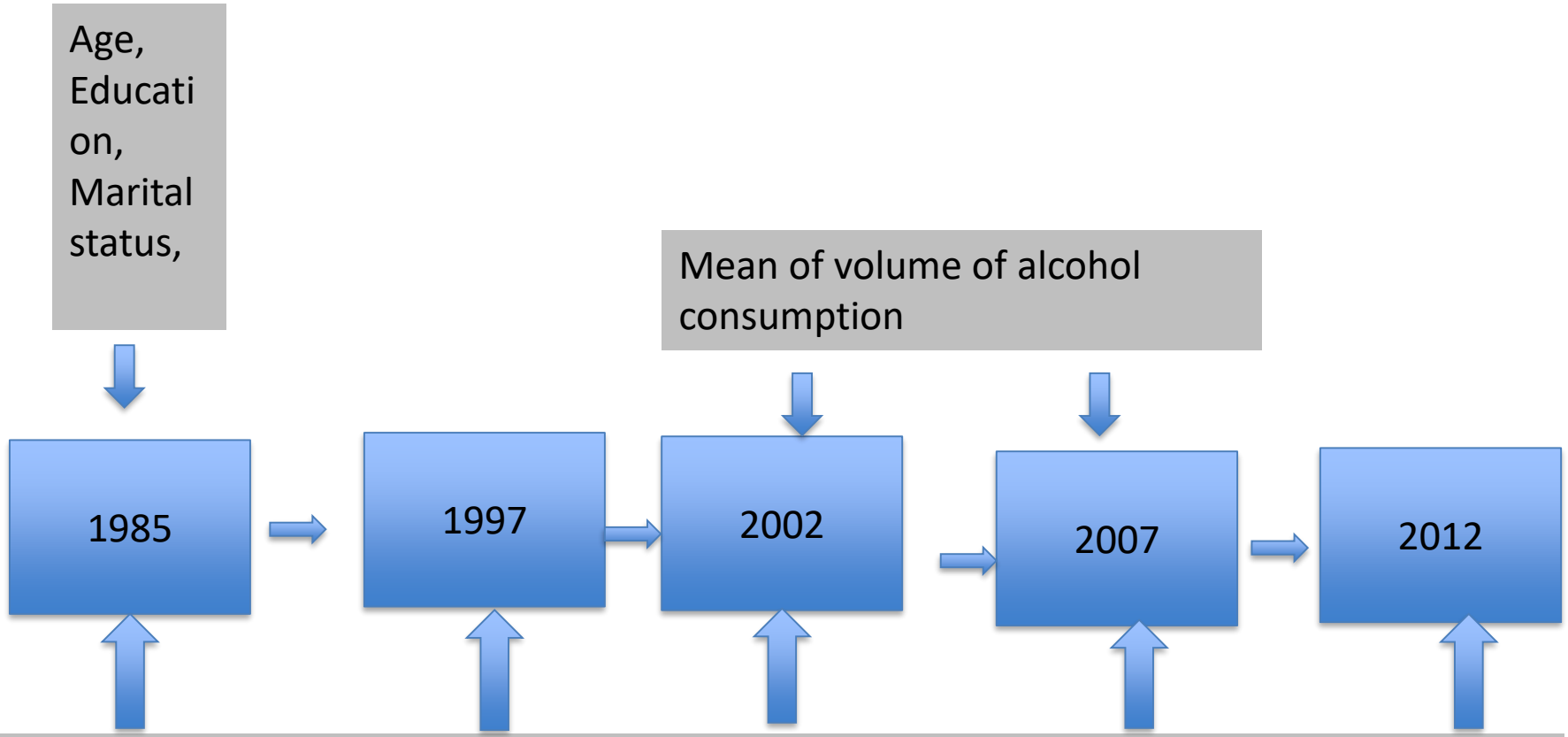
- Analyzed data from the electricity generating authority of Thailand study (EGAT)
- EGAT1, Data was collected in five waves of data collection, including 1985, 1997, 2002, 2007 and 2012
- Collected data among EGAT workers aged 35-54 years old



Study samples



Measurement



Frequency of drinking, main outcomes(1.all cause of death, 2.cancer, and 3.CVDs) ,social mobility(stable low, stable high, high to low and low to high), smoking and physical activity

Patterns of alcohol consumption

Drinking pattern categories	Categorical definitions
• **Lifetime abstainers**	Reported lifetime abstainers in all study waves
• **Occasional drinkers and moderate drinkers**	Drink less than once a week and drink <40 gram/day for females and <60 gram/day for males
• **Occasional drinkers and heavy drinkers**	Drink less than once a week and drink ≥40 gram/day or above for females and ≥60 gram/day for males
• **Regular drinkers and moderate drinkers**	Drink once a week and drink <40 gram/day for females and <60 gram/day for males
• **Regular drinkers and heavy drinkers**	Drink once a week and drink ≥40 gram/day or above for females and ≥60 gram/day for males
• **Ex-drinkers**	People who did not drink overall the last 1 year in the last waves

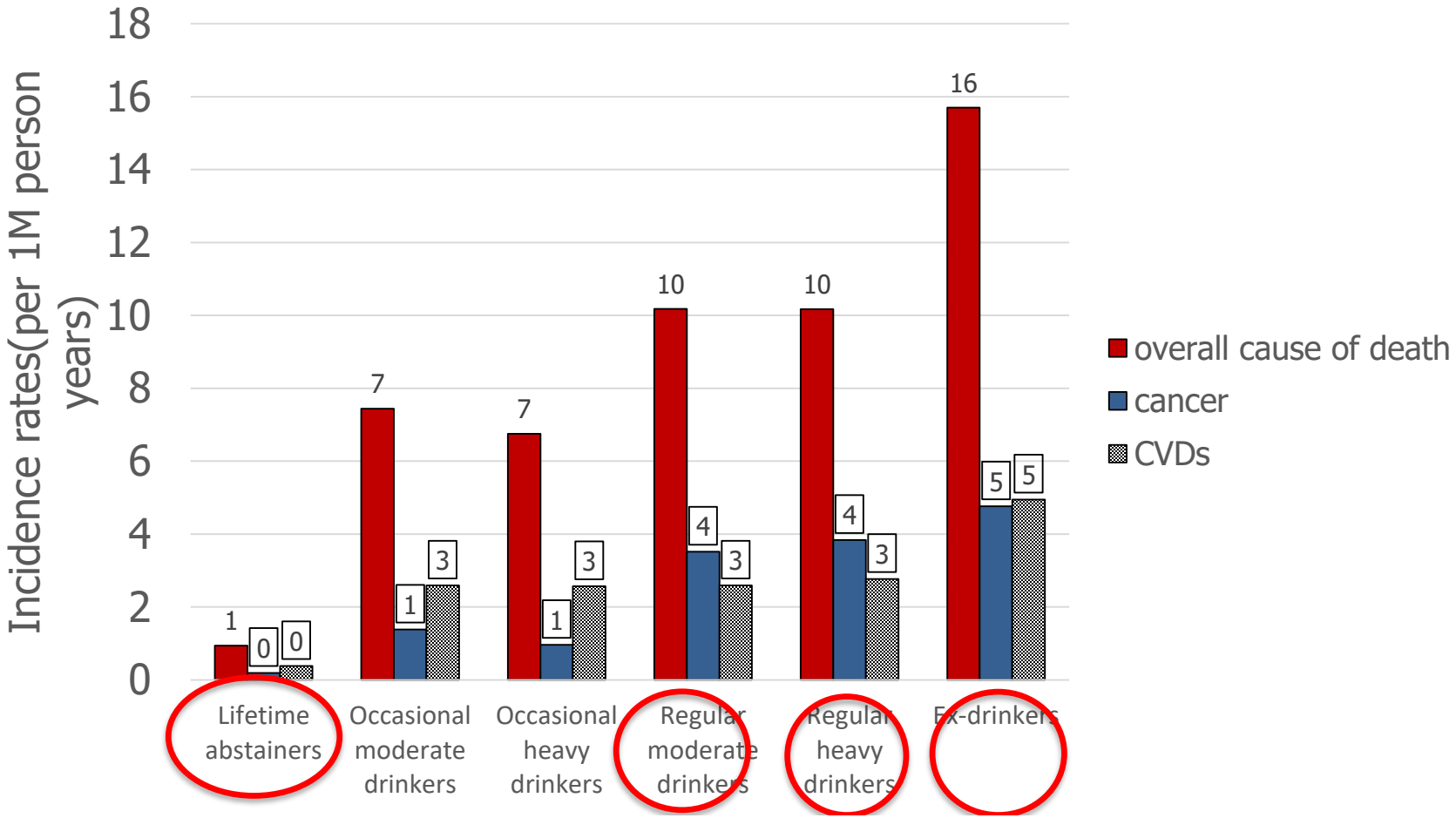
Source: adapted from WHO,2000

Data analysis

- Using **cox proportional hazards** to investigate the associations between patterns of alcohol consumption and all cause of death, cancer and cardiovascular diseases.
- The models adjusted for gender, age at baseline, social mobility, physical activities and smoking status
- **Sensitivity analysis** was conducted using **logistic regression**

RESULTS

Incidence rates across different types of drinkers



Association between alcohol consumption patterns and all cause of death, cancer, and CVDs, using cox proportional harzards

Alcohol consumption	all death Hazard ratio(95%CI)	Cancer Hazard ratio(95%CI)	CVDs Hazard ratio(95%CI)
Patterns of alcohol consumption (vs. lifetime abstainers)			
• Occasional and moderate drinkers	3.79(1.47,9.79)*	4.31(0.52,35.59)	2.42(0.53,11.06)
• Occasional and heavy drinkers	3.54(1.30,9.60)*	3.16(0.32,31.43)	2.59(0.53,12.73)
• Regular and moderate drinkers	4.41(1.72,11.32)*	10.08(1.29,78.66)*	2.04(0.44,9.44)
• Regular and heavy drinkers	4.45(1.77,11.20)*	10.75(1.42,81.52)*	2.21(0.50,9.75)
• Ex-drinkers	6.08(2.45,15.09)*	12.82(1.73,94.94)*	3.35(0.78,14.35)

p-value<0.05

Association between alcohol consumption patterns and all cause of death, cancer, and CVDs, using logistic regression

Alcohol consumption	Overall death Hazard ratio(95%CI)	cancer	CVDs
Patterns of alcohol consumption (vs. lifetime abstainers)			
• Occasional and moderate drinkers	3.95(1.48, 10.56)*	4.47(0.53, 37.49)	2.47(0.53, 11.59)
• Occasional and heavy drinkers	3.65(1.29, 10.34)*	3.25(0.32, 32.98)	2.59(0.51, 13.12)
• Regular and moderate drinkers	4.61(1.73, 12.28)*	10.91(1.37, 86.65)*	1.97(0.41, 9.39)
• Regular and heavy drinkers	4.71(1.82, 12.23)*	11.85(1.54, 91.26)*	2.18(0.48, 9.86)
• Ex-drinkers	6.51(2.56, 16.54)*	12.70(1.70, 95.03)*	3.00(0.68, 13.16)

p-value<0.05

Discussion

- Hazards rates of overall cause of death and cancer among all types of drinkers in present study were **greater compared to previous studies** conducted in high income countries (Licaj *et al*,2016 & Andrew *et al*, 2018).
  - **Explanation could be differences in**
    - Drinking patterns
    - Health care services for drinkers
- The association between alcohol consumption and cardiovascular diseases was **not statistical significant in present study,** which differed from Kamsa-ard *et al*, 2014: protective effect among female current drinkers and negative effect among all ex-drinkers
    - Differed in reference group selection
    - Present study: life time abstention, but previous studies selected those who drink less than one year

Limitations

- Samples are **not national representatives**; only included EGAT workers.
- There are other variables that did not take into account including **diet and BMI**.
- 28% of missing data due to volume of alcohol consumption.

Conclusions and policy recommendations

Conclusions

- The study confirmed association between patterns of alcohol consumption and all cause of death and cancer, but not CVDs.
- Regular moderate drinkers and heavy drinkers and ex-drinkers have higher hazard rates of being death and cancer than other types of drinkers.

Policy recommendations

- Policy interventions should be designed to reduce negative health effects of alcohol consumption, particularly high risk groups, including regular moderate drinkers and regular heavy drinkers and ex-drinkers.

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