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## **Alcohol consumption and risk of rheumatoid arthritis: results from the UK Women's Cohort Study**

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While some studies have suggested that moderate alcohol consumption may be beneficial for rheumatoid arthritis (RA) prevention(1), the role of competing events have not been considered and may lead to misinterpretation of the magnitude of the risk between alcohol intake and RA incidence. We aimed to investigate the relationship between alcohol consumption and RA incidence when the competing risk of death is accounted for in the survival analysis.

Data from the UK Women's Cohort Study (UKWCS), a prospective cohort study of 35,372 middleaged women established between 1995 and 1998, was used for the analyses(2). Alcohol intake was assessed at baseline by asking for the number of specified units of each type of alcoholic beverage (beer, wine, sherry, and spirits) consumed per week. Cases who developed RA were identified through linkage with Hospital Episode Statistics (HES) up to March 2019 (International Classification of Diseases, ICD-10 code M05-M06). Data linkage with the Health and Social Care Information Centre (HSCIC) allowed cause of death to be identified using ICD codes (9th/10<sup>th</sup> version). We used directed acyclic graphs, competing risk regression modelling, and subgroup analyses to examine the effect of alcohol intake on RA incidence.

Among 29,830 women linked to the HES data (666,857 person-years), 255 cases of rheumatoid arthritis were identified, with a median follow-up of 22.5 years. After adjustment for confounders, in both competing risk regression and cox proportional hazards models, regular drinking was associated with a reduced risk of RA. In the competing risk model, with occasional drinkers (less than 1 serving of alcohol per week) as the reference, the subhazard ratios (SHRs) for non-drinkers were: SHR, 0.67, 95% CI: 0.43-1.07; regular drinkers: SHR, 0.70, 95% CI: 0.53-0.94. Every additional unit of alcohol per week was associated with a 3% lower risk of rheumatoid arthritis (SHR (95% CI): 0.97(0.96-0.99)). BMI modified the linear associations between alcohol intake and risk of RA(Pinteraction = 0.01). The incidence of RA in participants with a BMI <30 kg/m<sup>2</sup> (227 cases, 27,015 participants) was 2% lower for each additional serving of alcohol consumed per week (0.98(0.96-0.99)), no statistically significant effect was seen for alcohol in those with a BMI ≥30kg/m<sup>2</sup>, though numbers were smaller in this group.

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