

economic variance. Therefore other characteristics like GP use (particularly for mental health reasons) and psychosocial wellbeing become more important in explaining PASB. Future longitudinal research is planned to explore causation—for example, do GP users worry about teenagers because illness encourages feelings of vulnerability—or does worrying about neighbourhood problems exacerbate ill health? Current findings are consistent with the view that addressing PASB be included in strategies to address health inequalities.

## Alcohol

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### GAMMA-GLUTAMYLTRANSFERASE AS A PREDICTOR FOR ALCOHOL- AND NON-ALCOHOL-RELATED CANCER INCIDENCE

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**Objective** Recent evidence suggests that elevated levels of gamma-glutamyltransferase (GGT) are associated with both incidence and mortality of cardiovascular disease and cancer. Although GGT is regarded as a marker of liver function which may in turn reflect alcohol consumption, to date, no study has investigated the relationship of GGT with cancer sites known to be alcohol-related or non-related.

**Design** Prospective cohort follow up and linkage study.

**Participants and setting** First visit measurements in 94 628 adult women and 80 224 men screened for metabolic risk factors as part of a standardised primary care assessment in Vorarlberg province of Austria. During a median follow-up of 13 years, a total of 5136 incident cancers were diagnosed in men and 4665 in women.

**Methods** Sex-specific Cox proportional hazards models, adjusted for age, body mass index and smoking were performed to estimate HRs and 95% CI per quintiles of GGT.

**Results** In males, the highest GGT-quintile revealed a high risk of alcohol-related cancer incidence (HR 2.20, 95% CI 1.74 to 2.78). The association was strongest for cancers of the liver and intrahepatic bile ducts (HR 16.50, 4.00–68.19), followed by cancers of the lip, oral cavity, pharynx and larynx (HR 3.80, 2.33–6.20), esophageal cancer (HR 2.39, 1.01–5.72) and colorectal cancer (HR 1.36, 1.01–1.83). In females, there was a modest but significant association between GGT and alcohol-related cancers (HR 1.16, 1.02–1.32). GGT showed a significant association in breast cancer only (HR 1.19, 1.02–1.39). HRs were clearly elevated for cancers of the liver and intrahepatic bile ducts and for cancers of the lip, oral cavity, pharynx, larynx and oesophagus, however, without reaching significance due to limited number of cases. No association was seen for colorectal cancer. Additionally, elevated GGT was found to be significantly related to cancers with weak or no evidence of alcohol consumption as a risk factor. In males, there were associations with pancreatic cancer (HR 2.13, 1.01–4.56), lung cancer (HR 2.04, 1.55–2.70), bladder cancer (HR 1.76, 1.11–2.77) and kidney cancer (HR 1.61, 0.92–2.82, *p* for trend=0.009). In females, the association was most pronounced in cervical cancer (HR 3.77, 1.94–7.32), followed by lung cancer (HR 1.63, 1.02–2.60) and endometrial cancer (HR 1.42, 0.98–2.05, *p* for trend=0.013).

**Conclusion** Although elevated GGT levels were strongly associated with incidence of alcohol-related cancers, most markedly in men, there were still effects of GGT in non-alcohol related cancer sites.

This suggests that alcohol consumption explains the relationship between GGT and cancer outcomes only in part.

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### BINGE DRINKING IN MIDLIFE AND THE RISK OF DEVELOPING DEPRESSION DURING YEARS OF FOLLOW-UP

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**Objective** To examine the relationship between binge drinking at baseline and the onset of new depression during 24 years of follow-up after adjustment for age, socio-economic status, education and marital status.

**Design and setting** Data from phases 1 (1985–1988) to 9 (2007–2009) of the Whitehall II prospective cohort were used.

**Participants** 5985 (male=4161, female=1824) British civil servants aged 35–55 years who were free from depression at baseline.

**Comparison groups** Cohort members were grouped, at phase 1, according to their self-reported usual and maximum number of alcoholic drinks consumed in a single sitting—abstainers, non-bingers (reference category) and bingers. Alcohol consumption was split into two categories and number of drinks consumed was converted to units for analysis: wine and spirits (1 unit per drink), and beer (2 units per drink). For usual drinking sessions those who reported consuming 5+ units of wine/spirits and 10+ units of beer were categorised as bingers, those consuming 1–4 units of wine/spirits or 1–9 units of beer were classified as non-bingers. For maximum drinking sessions, participants were defined as bingers following the Department of Health guidelines as those consuming 8+ or 6+ units of alcohol for males and females respectively for both categories of consumption. Those who reported consuming no drinks were classified as abstainers in all analyses.

**Main outcome measures** The 30-item General Health Questionnaire (GHQ-30) was administered at all phases of data collection. The depression subscale of the GHQ-30 was used to identify new cases of depression (scores of 4 or more) across all phases.

**Results** Adjusted HRs and 95% CIs were estimated using Cox proportional hazard models fitted in the total cohort and stratified by gender. Usual drinking session spirit/wine bingers had an elevated risk of depression (HR 1.28, CI 1.02 to 1.60) compared to non-bingers in the total sample. Maximum drinking session spirit/wine bingers had a greater risk of depression in the total (HR 1.23, CI 1.04 to 1.44) and male (HR 1.27, CI 1.03 to 1.56) samples. There were no statistically significant effects when using beer measures as exposures or for abstainers in any alcohol measures after adjustment for confounders.

**Conclusion** Binge drinking on wine and spirits, but not beer, in midlife increases the risk of having a depressive episode over the course of the following 22–24 year period. Future work will examine other covariates and explore bidirectional issues in this relationship.

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### ALCOHOL USE AMONG RUSSIAN MEN: THE ASSOCIATION BETWEEN AUDIT SCORE AND SELF- AND PROXY-REPORTED DRINKING BEHAVIOURS

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**Objectives** Alcohol use in Russia has a number of relatively distinct features which have been shown to be strongly associated with mortality. The aim of this paper is to investigate how specific