Ethnic differences in alcohol-related diseases in Scotland. The Scottish Health and Ethnicity Linkage Study (SHELS)

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Introduction
The overall incidence and burden of alcohol-related diseases has increased in UK in the past decades, with liver cirrhosis incidence being the only major chronic disease to increase. Simultaneously, ethnic diversity has grown in UK, with 1-in-5 people identified with an ethnic group other than White British in the 2011 Census (England & Wales). However, little is known about ethnic inequalities in alcohol-related and liver diseases in UK. Using record linkage of hospital admission and mortality to the Scottish Census 2001, we examined ethnic differences in the incidence of three main alcohol and liver outcomes: alcohol-related diseases (ARD); alcoholic liver disease (ALD) and all liver diseases.

Methods
The Scottish Health and Ethnicity Linkage Study (SHELS) links information from the Scottish Census 2001 (e.g. ethnicity, socio-economic status) to health information (NHS Scotland hospital admission SRM01, mortality records). We obtained data on age, gender, ethnicity, country of birth, socio-economic factors (April 2001), as well as the occurrence of a first event (hospitalisation or death within 9 years of follow-up) for ARDs.

ARDs included: K70 Alcoholic liver disease (ALD); F10 Mental and behavioural disorders due to use of alcohol; G31.2 Degeneration of nervous system due to alcohol; G82.1 Alcoholic polyneuropathy; I42.6 Alcoholic cardiomyopathy; K73 Chronic hepatitis, not elsewhere classified; K74 Fibrosis and cirrhosis of the liver (excluding K74.3 – K74.5 – biliary cirrhosis); K86.0 Alcohol-induced chronic pancreatitis; X45 Accidental poisoning by alcohol; X65 Intentional self-poisoning by alcohol; and Y15 Poisoning by alcohol. All liver diseases included K70-K74.

Poisson rates (PR) were calculated using Poisson regression with robust variance and multiplied by 100, by gender, adjusted for age and subsequently for SIMD, CoB and SIMD:

- Alcohol-related diseases risk:
  - Increased twofold in Irish men (relative risk [RR] 225; 95% CI 196 to 258) and women (162; 147 to 224); twofold in mixed women (158; 115 to 219) by quarter in other British women (126; 107 to 148)
  - Reduced in other British men (89; 90 to 98), Chinese men (47; 38 to 58), Pakistani men (66; 55 to 78) & women (49; 30 to 78)
- Alcoholic liver disease risk:
  - Increased by half in Irish men (RR 165; 95% CI 130 to 209) and women (150; 117 to 193)
  - Reduced in other British men (61; 50 to 75), Pakistani men (62; 42 to 90) and South Asian women (73; 58 to 91)
- All liver diseases risk:
  - Increased by half in Chinese men (144; 118 to 175) and women (133; 107 to 165), and Pakistani men (140; 112 to 176)

Results
- The total numbers of first events within the 9 years period of interest (over almost 30 million of PY at risk) was 72,857 for all liver diseases, 15,213 for alcoholic liver disease, and 51,908 for alcohol-related diseases.

Conclusion
This unique linked data allowing the comparison of incident specific alcohol-related and liver diseases hospital admission or death between ethnic groups has shown variation in white and non-white minority ethnic groups in Scotland, even after adjustment for age, CoB and SIMD. Compared to the White Scottish population, the other White groups had a reduced risk of alcohol-related diseases; whereas the Irish and mixed races had an increased risk of alcohol-related diseases and alcoholic liver diseases, whilst the Chinese and Pakistani had an increased risk of overall liver diseases (eg, viral hepatitis). These findings warrant clinical and policy attention, as well as research to identify underlying causes and interventions.

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