Regional variations in German head and neck, laryngeal and esophageal cancer: mortality rates and incidence patterns.

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Squamous cell carcinoma (SCC) of the head and neck, larynx and esophagus (HNC) are mainly preventable diseases. Namely tobacco use in combination with alcohol consumption, and viral infections are accessible to preventive means. It is well known that area context effects alcohol and tobacco consumption (Blomgren 2004). A large East-West-gap in the alcohol-related burden of mortality, and a North-South-gap in tobacco-related burden of mortality have been identified in Germany (Nolte 2003; Mons 2011), However it is unclear how regional variation in SCC-incidence of the head and neck and HNC mortality is patterned in Germany.

Nationwide population based cancer registration

Identification of incident HNC cases:
1) Data from registries with estimated completeness of ≥80% for incident head & neck tumors in 2011 (reference-pool and method: Kraywinkel 2014)
2) ICD-O-10 topography codes C01-06, C09-15, C32 and ICD-O-3 morphology codes (8050-8084), men and women aged 35-79 years, year of diagnosis 2010-2012

Mortality data is provided by the Federal Statistical Office Germany

Figure 1. Population based cancer registration is federally organized and was implemented between 1926 and 2009

Regional variation largest among younger men

Figure 2. Standardized HNC mortality rate ratios (East to West Germany) for men, by age group, 1990-2012

Figure 3. A red (high) – green (low) color scale depicts regional variation, standardized HN-SCC incidence rates for men (provided, per 100,000) on federal state basis, by age group

Increasing regional disparities

- Existing health inequalities continue to increase in Germany
- East-West-HNC mortality gap among men below 60 years of age widens
- Large within-country variance of HN-SCC is not substantiated by sufficient data on regional variation of HPV burden in head and neck in Germany (for summary statistics see ICO Information Centre on HPV and Cancer)
- Multiplicative effects from alcohol consumption in combination with smoking might explain the observed regional clustering across all subsites of HN-SCC in areas of high alcohol-related mortality
- Timely transfer of results on gender, age and geographic variance to regional health authorities is needed to promote local cancer control strategies


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