Abstract

Background: In Germany, regional differences in cancer incidence on state level have been suggested in previous studies (e.g. GEKID Atlas). Internationally, a correlation between socioeconomic status and cancer incidence at district level has been observed in many cancer types, such as colorectal (CRC) and breast cancer (BC). This generates questions regarding possible variations among German districts in the effect of specific health policies. With exception of Hoebel et al. [1], previous analyses at district level have focused on particular states covering parts of Germany only. This study analyzes differences at district level of cancer incidence and whether these differences can be explained by variations in colorectal and mammography screening rates and/or socioeconomic status. The objective is to separately consider the effect of the three main dimensions of socioeconomic status, 1. education, 2. occupation and 3. income, on cancer incidence, and comparing these with the effect of measuring socioeconomic status throughout only one variable: the German Index of Socioeconomic Deprivation [1].

Methods: Data from the German Cancer Registry for all patients diagnosed with BC and CRC between 2009 and 2014 is considered. Incidence rates by age, sex and district (n=402) are calculated. Due to low completeness estimates in the database, out of 402 districts, 356 (89%) were analyzed for breast cancer and 292 (73%) for colorectal cancer. Socioeconomic dimensions are represented by (1) the share of school leavers with the German Abitur (advanced school-leaving certificate), (2) the long-term unemployment rate, and (3) the disposable income per household. Cancer incidence maps are created to show differences in incidence on district level. Random Effect Models were estimated by age and sex.

Results: For BC, the disposable income and the long-term unemployment rate showed a significant positive association with incidence. For CRC, the disposable income and the share of school-leavers with Abitur show a significant negative association with male colorectal cancer incidence. After including colonoscopy, the model for men age of 65 or more shows significant results with a negative gradient for disposable income, the share of school-leavers with Abitur and colonoscopy. On the contrary, female colorectal cancer incidence is not explained by income or education levels. For women age 65 or more, the model suggests a positive association between CRC incidence and long-term unemployment, and a negative correlation with colonoscopy.

Conclusion: This study adds further support for the correlation of SES, and BC as well as CRC incidence in Germany. Findings are generally consistent with existing literature. Research on individual SES dimensions for Germany remains scarce.