Small-area risk for various types of cancer and regional participation quotes in cancer screenings – is there a socioeconomic gradient?

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Introduction:

For some cancer types, there is a debate whether they could have been diagnosed earlier through regular participation in cancer screenings and whether current screening strategies really reach those at higher risk of cancer. To facilitate future prevention strategies, it is therefore necessary to understand, which person groups have a higher risk of cancer and which person groups currently participate in cancer screenings. This study aims to display the small-area risk of various cancer types, the participation quotes of different cancer screenings and their relation to individual and areal-level sociodemographic variables.

Methods:

In this study, we used individual-level data of 1.7 million insurants of the AOK Nordost. For the cartographic visualization of cancer risk and participation quotes in cancer screenings, the Besag-York-Mollie (BYM) model was applied (Riebler et al. 2016). Individual and areal-level sociodemographic associations were investigated using a logistic BYM regression model (Kauhl et al. 2023). To examine whether some associations vary over space, a spatially varying coefficient model was additionally applied (Kauhl et a. 2022). All calculations were carried out using the INLA package and were visualized using the ggplot2 package in R.

Results:

Risk estimates for various types of cancer and participation quotes for cancer screenings varied widely across municipalities and neighbourhoods of northeastern Germany. Some cancers such as lung cancer were more common in socially disadvantaged areas while others such as skin cancer were more common in more affluent areas. The participation quotes in cancer screenings were generally higher among employed insurants residing in socially advantaged areas. These results highlight that future strategies should aim to increase participation in cancer screenings among persons with low individual socioeconomic status and persons living in socially disadvantaged areas.

Literature:

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