

Title: Spatial variation of salt intake in Britain and association with socioeconomic status

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Abstract:

Objectives: To evaluate spatial effects of variation and social determinants of salt intake in Britain.

Design: Cross-sectional survey.

Setting: Great Britain.

Participants: 2105 white male and female participants, aged 19–64 years, from the British National Diet and Nutrition Survey 2000–2001.

Primary outcomes: Participants' sodium intake measured both with a 7-day dietary record and a 24-h urine collection. By accounting for important linear and non-linear risk factors and spatial effects, the geographical difference and spatial patterns of both dietary sodium intake and 24-h urinary sodium were investigated using Bayesian geo-additive models via Markov Chain Monte Carlo simulations.

Results: A significant north–south pattern of sodium intake was found from posterior probability maps after controlling for important socio demographic factors. Participants living in Scotland had a significantly higher dietary sodium intake and 24-h urinary sodium levels. Significantly higher sodium intake was also found in people with the lowest educational attainment (dietary sodium: coeff. 0.157 (90% credible intervals 0.003, 0.319), urinary sodium: 0.149 (0.024, 0.281)) and in manual occupations (urinary sodium: 0.083 (0.004, 0.160)). These coefficients indicate approximately a 5%, 9% and 4% difference in average sodium intake between socioeconomic groups.

Conclusions: People living in Scotland had higher salt intake than those in England and Wales. Measures of low socioeconomic position were associated with higher levels of sodium intake, after allowing for geographic location.

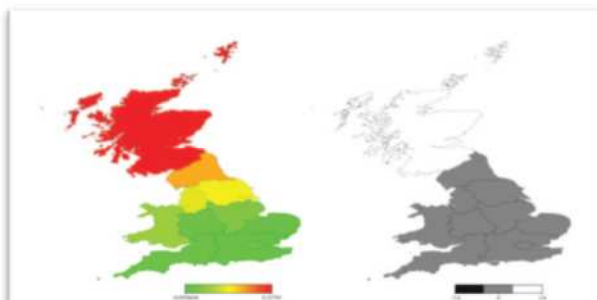


Figure 2 Estimated posterior mean residual spatial regional effects (left) and 90% posterior probability map (right) of dietary sodium intake. Left panel: the colour band represents the range of regional effect. Shades in red/green correspond to high/low levels of dietary sodium consumption. Right panel: white (value=1.0) indicates significantly positive spatial effect, grey (value=0) indicates a non-significant effect and black (value=-1.0), if there is any, indicates a significantly negative effect.

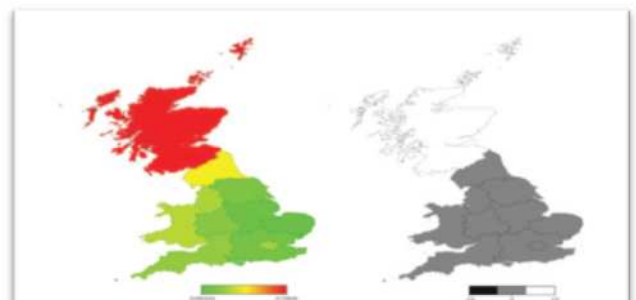


Figure 3 Estimated posterior mean residual spatial regional effects (left) and 90% posterior probability map (right) of 24-h urinary sodium. Left panel: the colour band represents the range of regional effect. Shades in red/green correspond to high/low levels of dietary sodium consumption. Right panel: white (value=1.0) indicates significantly positive spatial effect, grey (value=0) indicates a non-significant effect and black (value=-1.0), if there is any, indicates a significantly negative effect.