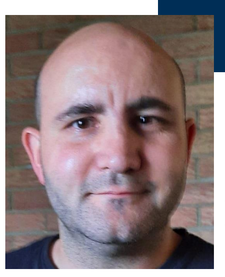
LANGUAGE AS A BARRIER TO COLORECTAL CANCER SCREENING IN FLANDERS: AN ECOLOGICAL STUDY



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Background: Despite its potential with regard to the prevention and early detection of colorectal cancer (CRC), participation in the official CRC screening programme of the Belgian region of Flanders is suboptimal. The role of language discordance as a determinant of screening participation in Europe is still poorly understood, despite having been identified as a potential barrier in qualitative and non-European studies.

Methods: In an ecological study analysing data on the level of Flemish municipalities (n = 300) from 2016 to 2021, we investigated whether the proportion of non-Dutch speakers at home is correlated with the response rate to CRC screening programme invitations and/or the total CRC screening coverage using multiple linear regression. We also performed Kruskal-Wallis tests and Dunn's tests to examine municipal differences in screening based on their adjacency to the regions of Brussels and Wallonia.

Results: After adjusting for confounders, the proportion of secondary school pupils that primarily speak a language other than Dutch at home was associated with a lower screening response rate (β = -0.327 ± 0.0315) and lower total screening coverage (β = -0.195 ± 0.0241). Coverage and response rates were higher in municipalities at least two towns away from the border with Wallonia, Brussels or France. Our findings suggest that a high proportion of French speakers is particularly indicative of linguistic barriers to screening in Flemish municipalities (β = -0.358 ± 0.0388 for response rate and β = -0.213 ± 0.0253 for total coverage).

Conclusion: Our study highlights the need to consider potential linguistic challenges when optimizing CRC screening policies.

Methods (1)

Analysing open-source Flemish government data (2016-2021), a Spearman correlation matrix informed the iterative construction of a multiple linear regression model estimating the association between language spoken at home and screening response rate or coverage adjusted for confounders.

Results (1)

Not speaking Dutch at home was negatively associated with CRC screening response rate (β = -0.327, 95% CI -0.359; -0.296) and screening coverage (β = -0.195, 95% CI -0.219; -0.171).

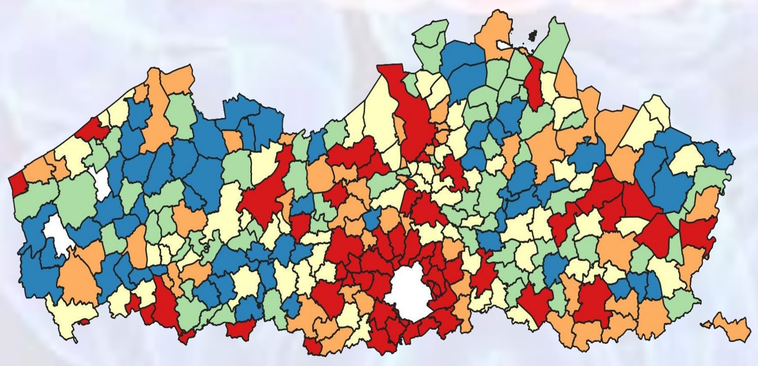
Methods (2)

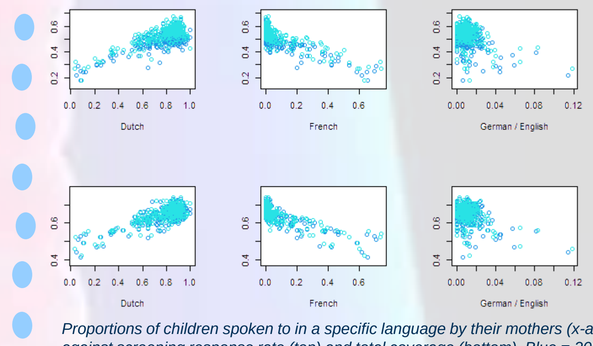
In-depth analysis:

- Multiple linear regression models with specific language groups as exposure
- Kruskal-Wallis + Dunn's tests to compare screening indicators between towns based on their proximity to Wallonia and/or the Brussels Capital Region

Research Question

Does language present a barrier to CRC screening for eligible inhabitants of Flemish municipalities?



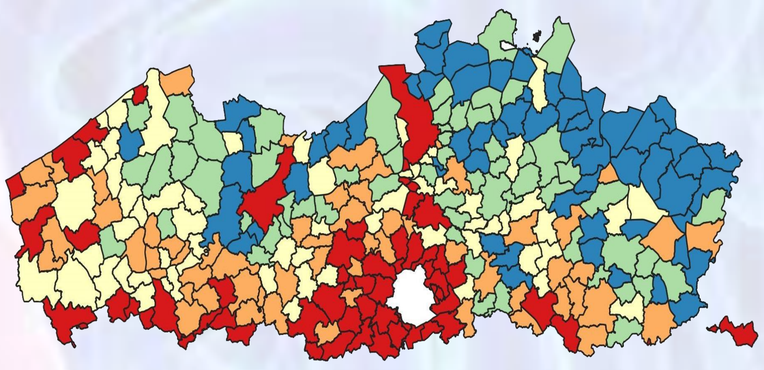


Proportions of children spoken to in a specific language by their mothers (x-axis) against screening response rate (top) and total coverage (bottom). Blue = 2020; light blue = 2021.

Response Rate	β (95% CI)
Dutch	0.137 (0.103; 0.171)
French	-0.301 (-0.345; -0.257)
German, English	-0.466 (-0.754; -0.178)
Total Coverage	**β (95% CI)**
Dutch	0.104 (0.081; 0.127)
French	-0.201 (-0.232; -0.170)
German, English	-0.364 (-0.570; -0.158)

Background

Research by the Flemish Cancer Detection Centre has identified several demographic, socio-economic and behavioural factors associated with participation in CRC screening in Flanders (Tran et al. [2021]). Qualitative evidence suggests that language may also be such a factor (Hoeck et al. [2020], Hoeck & Tran [2022]), but confirmation from quantitative studies is lacking.



Results (2)

Models with the best fit showed a positive effect of speaking Dutch or an Eastern European language and a negative effect of speaking French or a Germanic language on both screening indicators.

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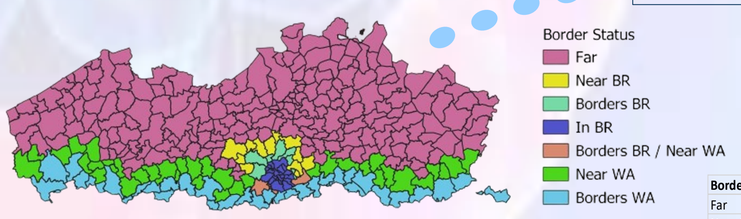
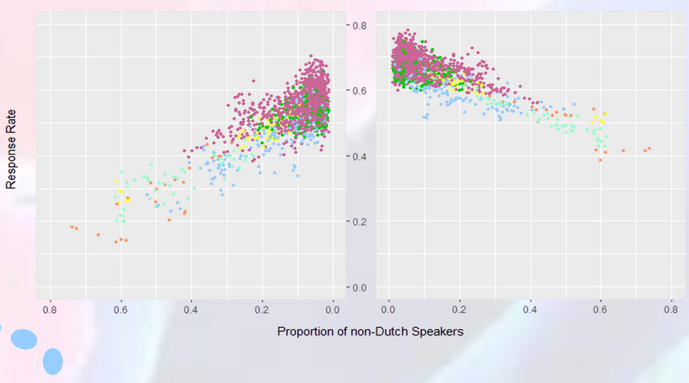


Border Status	N	Avg. Rsp.	Avg. Cov.
Far	1230	0.556	0.676
Near BR	66	0.473	0.627
Borders BR	48	0.331	0.518
Borders BR / Near WA	24	0.282	0.511
Near WA	222	0.53	0.66
Borders WA	210	0.462	0.614

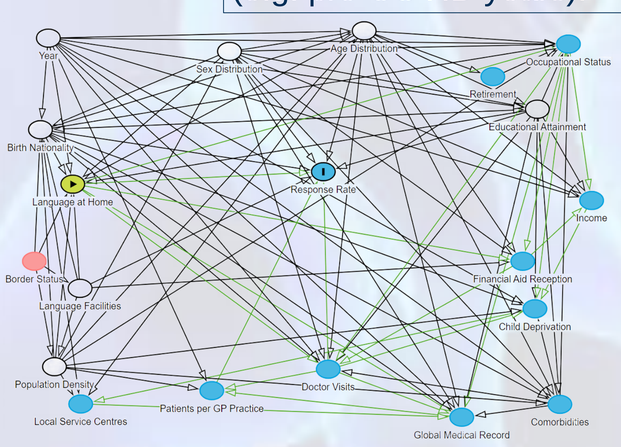
Sensitivity Analyses

Associations remained robust after analysing DAG-based models including citizenship of birth, or subsets of data (e.g. pre-COVID years).



Results (3)

We observed a screening gradient between municipalities bordering Wallonia and Brussels, municipalities one town away from these regions, and municipalities even further away.



Directed acyclic graph depicting inferred causal relationships between exposure (green), outcome (blue with symbol) and covariates. Covariates included in the regression model are whited out. Green arrows indicate causal pathways.

Discussion & Conclusion

Language-based barriers to CRC screening in Flanders are prominent in municipalities with many non-Dutch speaking inhabitants, especially native French speakers.

Policy interventions aiming to increase CRC screening should take these linguistic hurdles into account.

References:

(S.) Hoeck & T.N. Tran (2022). *Self-Reported Reasons for Inconsistent Participation in Colorectal Cancer Screening Using FIT in Flanders, Belgium.* Gastrointest Disord Vol.5(1), p.1-14. doi: 10.3390/gidisord5010001.

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(T.N.) Tran, G. Van Hal, M. Peeters, S. Jidkova, H. De Schutter, S. Hoeck (2021). *Population-Based Data Reveal Factors Associated with Organised and Non-Organised Colorectal Cancer Screening: An Important Step towards Improving Coverage.* Int J Environ Res Public Health Vol.**18**(16), doi: 10.3390/ijerph18168373.

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