Small-Area Analysis of Participation Rates in a Colorectal Cancer Screening Program in Catalonia

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Background

The organization and characteristics of health systems play a relevant role in health equity, either by reducing the inequalities generated by other social determinants, or by increasing them (WHO, 2008).

Although population-based screening programs have a universal approach may not guarantee equitable effects.

Background

Putting inequality on the map: information about variability is lost when we look at big-picture averages rather than smaller geographical units.
Objectives

❑ To estimate variations in CRC screening participation at a primary health care area.

❑ To analyze, from an ecological perspective, whether deprivation is associated with screening participation
Catalan Institute of Oncology Screening Hub

2018-2019
Participation: 40%
Colorectal Cancer Screening Algorithm

Screening invitations are sent according to primary healthcare areas (territorial divisions through which primary health care services are organized) – 98 PHA

Methods

Hierarchical Bayesian Model

Smoothed Standardized Participation Rates for 2018-2019 (dependent variable)

Association measures: relative risks and 95% credible intervals
Methods

Independent Variables:

Collaborating pharmacies (accessibility): % [40%-100%]

Foreign-born individuals: % [1.8%-33.5%]

Foreign-born individuals from non-Spanish speaking countries: % [1.3%-28.6%]

[...]
Methods

[...] Independent Variables:

Deprivation index (AQUAS): [9.97-100]
Score: 0–100. Higher scores on this index represent greater socioeconomic deprivation.

Deprivation index for the assignation of the budgets of the primary healthcare teams in Catalonia (Spain) valid for both urban and rural environments and updatable with greater frequency than indices built from census variables.

Results

Null Model
Deviance Information Criterion (DIC) ...............: 1083.23

<table>
<thead>
<tr>
<th>RR</th>
<th>95% credible intervals</th>
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<tbody>
<tr>
<td>(Intercept)</td>
<td>1.02</td>
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<tr>
<td>Collaborating pharmacies</td>
<td>1.01</td>
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<tr>
<td>Deprivation Index</td>
<td>0.99</td>
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<tr>
<td>Deprivation Index^2</td>
<td>0.97</td>
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Deviance Information Criterion (DIC) ...............: 1079.98

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<tr>
<td>Non-Spanish speaker foreigners</td>
<td><strong>0.97</strong></td>
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Deviance Information Criterion (DIC) ...............: 1076.74

Inverted U-shaped curve: lower participation rates among the least and the most deprived areas.
Results

Correlation between deprivation index and foreign-born population

Correlation between deprivation index and foreign-born population from non-Spanish speaking countries
Results

Excess risk (no participation)
Discussion

➢ Overall screening participation is still below acceptable levels (<45%).

➢ Social inequalities have been observed in CRC screening – modest impact.

➢ Language barriers seems more important than deprivation index.

➢ Geographic analysis enables us to identify areas that warrant concentrated efforts to improve CRC screening.
Discussion

What is next?

Randomized Controlled Trial

Text messaging as a tool to improve cancer screening programs.

Acknowledgments

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