

## Differences in Colorectal Cancer Incidence and Survival among First-Generation Labour Immigrants and the Belgian Host Population

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### Background

Belgium is a country with a long history of immigration (1,2). A large share of Belgium's immigrant population consists of traditional labour immigrants, mainly from Turkey, Morocco and Italy. It is essential to monitor the health status of this segment of the population for several reasons. First, they represent a significant proportion of the Belgian population and therefore can help to identify important health inequalities (3). Second, as they changed environment throughout their life course, their disease patterns may reveal important clues on disease aetiology and hence prevention (4–7).

Many international and Belgian studies have already documented cause- and cancer-specific mortality patterns of immigrants (a.o. 1,8–16). Generally, these studies have observed a migrant mortality advantage (MMA) compared to the native population (1,7,11–14,17). This finding is often referred to as the mortality paradox as immigrants tend to have more disadvantaged socioeconomic positions (SEP) compared to the native population (12,18–20). What is less known however, is whether the MMA is due to differences in disease occurrence (incidence) or due to survival. Therefore, with this study, we want to assess the differences in colorectal cancer (CRC) occurrence between the Belgian population with and without a migration background. CRC is an important cancer site to study as it is one of the leading causes of cancer-related morbidity and mortality (21,22). In Belgium in 2016, 8,468 people got diagnosed with CRC (23), and 2,778 people died from CRC (24). Previous research in Belgium already assessed the CRC mortality patterns by migration origin, generally showing a MMA, although with variations by migrant origin and by gender (9,15).

With this study, we want to contribute to the current knowledge on CRC differences by mapping out differences in CRC incidence and survival by migrant origin using data at the Belgian population level and by assessing the contribution of sociodemographic and socioeconomic factors to these migrant incidence and survival differences.

### Data and methods

We used individually-linked data from three administrative sources: the Belgian census of October 1<sup>st</sup> 2001 containing sociodemographic and socioeconomic information (i.e. migrant origin, civil status, region of residence, educational attainment, and home ownership); the Crossroads Bank for Social Security providing vital status until July 1<sup>st</sup>, 2017 at the latest for all cancer patients; and the Belgian Cancer Registry containing all CRC diagnoses in Belgian residents between 2004-2013 as well as relevant tumour information (region of residence and stage at time of diagnosis). We included all native Belgians as well as first-generation immigrants from Italian, Turkish and Moroccan descent aged 50 to 74 years.

The outcome variable in this study is being diagnosed with CRC (ICD-10 codes C18-C20) during the follow-up period. If patients had multiple CRC tumours, only the first tumour was taken into account. The main explanatory variable of interest was migrant origin, based on nationality at birth. Next to migrant origin, several sociodemographic and socioeconomic variables of interest were taken into account, i.e. civil status, region of residence, educational attainment and home ownership.

Age-standardised incidence rates and incidence rate ratios were calculated by migrant origin. Additionally, relative survival and relative excess risk of dying within five years after diagnosis were calculated by migrant group. The relative models were assessed with and without adjustment for sociodemographic and socioeconomic variables.

## Results

Among men, compared with native Belgians, the CRC incidence rate was lower among all migrant groups, although the Italian incidence rate was very close to the Belgian incidence rate. On the other hand, the CRC incidence rates among Turkish and Moroccan men were much lower than the native Belgian incidence rate. Women had lower CRC incidence than men. As in men, Belgian women had the highest CRC incidence of all groups, although the incidence rate of Italian women was not statistically lower than that of Belgian women. The incidence rates of Turkish and Moroccan women on the other hand were lower than those of native Belgian women. Although CRC incidence was higher among e.g. unmarried or low-educated people, accounting for these sociodemographic or socioeconomic differences did not alter the observed CRC incidence differences in immigrants versus native Belgians.<sup>1</sup>

## Discussion and conclusion

This study is the first in Belgium to map out differentials in CRC by migrant origin at a population scale as well as the extent to which these disparities are driven by socioeconomic deprivation and demographic factors. To do so, we used nation-wide individually-linked data containing socioeconomic and sociodemographic information as well as CRC diagnoses for the entire study population and for a follow-up period of ten years. This rich dataset enabled us to calculate precise CRC incidence rates by gender and migrant origin.

This study revealed some important clues on CRC incidence patterns within the Belgian population. We observed lower CRC incidence rates among FG Belgian immigrants as compared to native Belgians. This pattern was also reflected in the Belgian mortality figures (9,15) and may be explained by lifestyle differences (4,25–28). Immigrants from Turkish and Moroccan descent combine the favourable Mediterranean nutritional pattern containing a high uptake of fruit and vegetables with low levels of alcohol consumption. The differences in CRC incidence in migrants could not be explained by sociodemographic or socioeconomic differences. Although CRC incidence was higher among unmarried persons, low-educated people, tenants (only in men) and people living in Flanders, accounting for these variables did not alter the observed CRC incidence differences in migrants versus the native population. This suggests that there are additional factors that are important for this association or that the explanatory factors (e.g. diet) are more strongly related to migrant origin than to SEP.

The preliminary results suggest that health gains can be made for the native population by adapting certain lifestyle habits, e.g. diet or physical activity. Future research should also

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<sup>1</sup> Please note that this study is a work in progress. The survival analyses are not yet finished.

document the health patterns of the descendants of these labour immigrants to verify whether this health advantage persists over generations.

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