The relationship between socioeconomic status and prostate cancer: a population-based cancer registry study

Hajer Ben Khadhra[1], Fabien Saint[2,3], Eric Trecherel[1], Bénédicte Lapotre-Ledoux[1], Salah Zerkly[1], Olivier Ganry[1]

1.Registre du Cancer de la Somme

2.Département Urologie et Transplantation-CHU Amiens Picardie

3.EPROAD EA 4669

Introduction

Morbidity and mortality associated with prostate cancer in a given geographic area might be related to the level of socioeconomic deprivation; the lower the socioeconomic level is, the higher the mortality rate and the cancer aggressiveness are. The Somme area (a region of northern France) is considered to be economically disadvantaged area, with a poverty rate significantly greater than the national average. The aim of this study was to assess the impact of the socioeconomic level on the incidence, aggressiveness, management, and mortality of prostate cancer, using data from a population-based cancer registry

Methods

Data on cases of prostate cancer between 2006 and 2010 were obtained from the Somme area cancer registry (Amiens, France). Socioeconomic status (SES) was measured according to the European Deprivation Index (EDI), which was used to classify each geographical "IRIS" unit (the smallest sub-municipal geographical entity for which French census data are available) according to its level of social deprivation. For spatial analysis, the goodness-of-fit of a hierarchical generalized linear modeling was assessed, checked by Moran's I test, and then modeled

Results

A total of 2405 incident cases of prostate cancer were registered in the Somme area during the study period. For **the incidence**, spatial analysis showed that the coefficient associated with the EDI was negative -0.348; 95%CI [-0.0831; -0.0190] which indicates that prostate cancer incidence decreased as the value of the EDI increased (Figure1).

For **aggressiveness**, the coefficient associated with the EDI was 0.0493; 95%CI [0.0162; 0.0810], the Q5/Q1 RR was 1.36; 95%CI [1.09; 1.73] (Table1). EDI coefficient for **waiting time for prostate cancer treatment** (after adjustment for the aggressiveness of prostate cancer and the proportion of patients aged 60 and over) was of 0.0268; 95%CI [-0.0665; 0.1218]. EDI coefficient for the proportion of cases having received **treatment with curative intent** versus those having received palliative treatment was -0.1089; 95%CI [-0.1505; -0.0693], which indicates that patients living in less disadvantaged areas were more likely than patients from more disadvantaged areas to receive treatment with curative intent.

For **mortality,** the coefficient associated with the EDI in the spatial analysis was positive, which indicates that prostate cancer mortality increased as the value of the EDI decreased (Figure2).

Table 1: Prostate cancer incidence, mortality, aggressiveness, treatment modality, and treatment waiting time, and the relative risk (RR) [95% confidence interval (CI)] associated with the socioeconomic deprivation index (quintile 5(Q5)/quintile 1(Q1)) in the Somme area (2006-2010).

	RR (Q5/Q1)	[95%CI]	p
Incidence	0.42	[0.32;0.57]	$<10^{-3}$
Mortality	3.09	[1.70;5.59]	$<10^{-3}$
Aggressiveness	1.36	[1.09;1.73]	$<10^{-6}$
Treatment modality (whether with curative intent or not)	0.52	[0.41;0.66]	$<10^{-3}$
Waiting time to treatment	1.05	[0.88;1.24]	>0.05

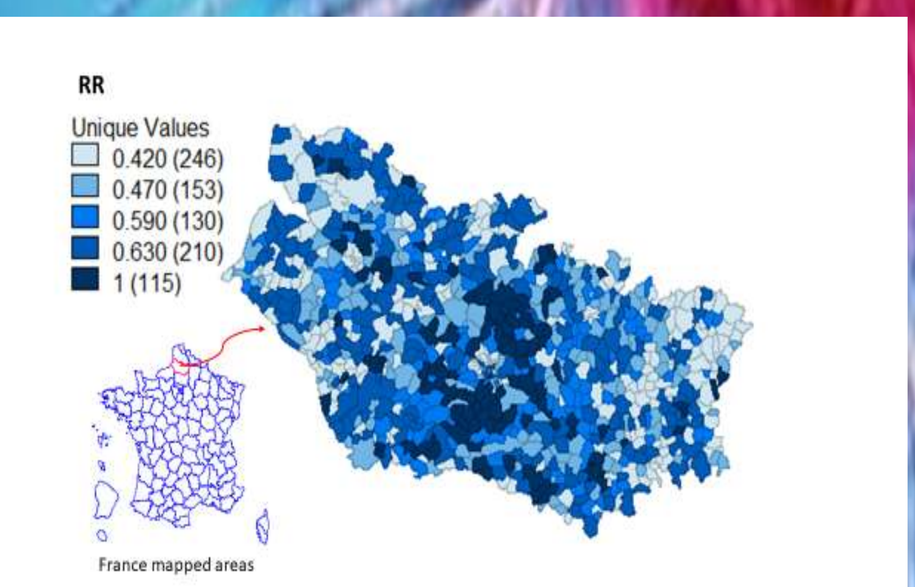

Figure1: Map showing the relative risk of prostate cancer incidence associated with the EDI in the Somme area (2006-2010).

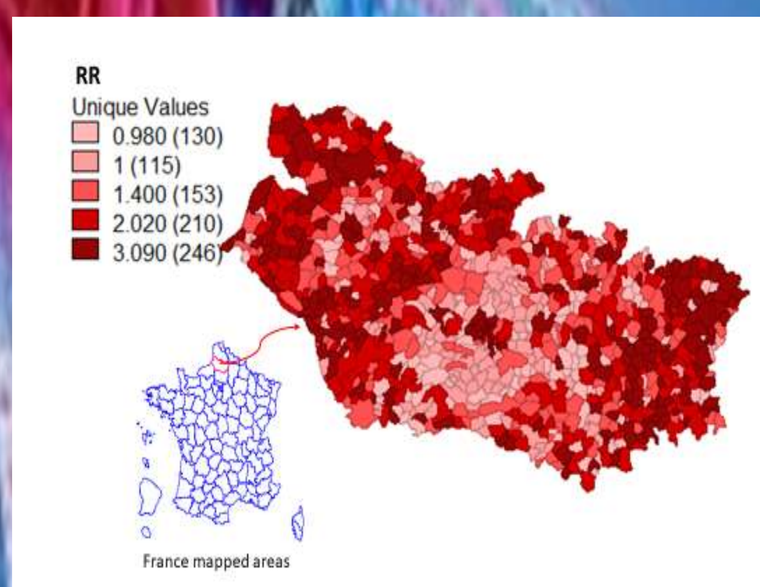

Figure2: Map showing the relative risk of prostate cancer mortality associated with the EDI in the Somme area (2006-2010).

Conclusion

Our results evidenced a significant association between socioeconomic deprivation and prostate cancer, with worse outcomes among men with the lowest socioeconomic status. Geographical differences in the screening rate might explain this pattern. More in-depth research (with a source data review) is now required to understand the determinism of this association.