

# The Impact of Socioeconomic Status on Prostate Cancer Treatment and Survival in the Southern Netherlands

Mieke J. Aarts, Evert L. Koldewijn, Philip M. Poortmans, Jan Willem W. Coebergh, and Marieke Louwman

<b>OBJECTIVE</b>	To investigate if socioeconomic status (SES) played a role in the selection of prostate cancer treatment and overall survival.
<b>METHODS</b>	Treatment and survival by SES of all newly diagnosed patients with prostate cancer (1998-2008) from the population-based Eindhoven Cancer Registry (n = 11,086) were studied.
<b>RESULTS</b>	Younger patients (<75) with early stage disease, including prostate-specific antigen (PSA)-detected stage cT1c, with low SES underwent prostatectomy and brachytherapy less often (10%-16% lower prostatectomy rates in low SES and 0%-7% lower brachytherapy rates in low SES) compared to those with high SES, but underwent more external beam radiotherapy, hormonal therapy, and watchful waiting policy (6%-9%, 5%-7%, and 3%-7% more in low SES, respectively). This was partially related to the prevalence of comorbidity. The introduction of brachytherapy for localized disease occurred first in high SES patients and these socioeconomic differences were hardly affected by socioeconomic differences in the presence of comorbidities. Overall 10-year survival was superior in high SES patients compared to low SES (localized disease 67% vs 44%, advanced disease 29% vs 20%), and was related to treatment and comorbidity. Multivariable adjusted death rates remained significantly elevated for patients with low SES, especially cT1c, age <60 (hazard ratio [HR] <sub>low_vs_high_SES</sub> 4.2, 95% confidence interval [CI] 1.3-13.7).
<b>CONCLUSION</b>	SES affected treatment selection and overall survival for patients with prostate cancer in the Southern Netherlands, where treatment guidelines exist and health care is fully covered. Presence of comorbidities only partly contributed to these differences. The relation with other SES-associated factors (eg, ability to understand medical information or to cope with health problems) remains to be explored. UROLOGY 81: 593–601, 2013. © 2013 Elsevier Inc.

Prostate cancer is the most common cancer in men and the incidence rate has been increasing during the last decade, which is ascribed largely to prostate-specific antigen (PSA) testing.<sup>1</sup> This increase was observed in men of 45 years and older, most markedly in high socioeconomic status (SES) groups.<sup>2</sup> It is likely that higher prostate cancer awareness in high SES<sup>3</sup> led to increased use of PSA testing and accompanying increasing incidence rates.

In addition, awareness may also lead to different therapies. For prostate cancer, radical surgery and/or external

beam radiotherapy are found to be more commonly used in patients with high SES.<sup>4-8</sup> This has not yet been studied for prostate cancer in the Netherlands, a country with supposedly equal access to care and full health insurance coverage. However, socioeconomic disparities in referral were observed for pancreatic cancer surgery with a higher referral rate to university hospitals for patients with high SES.<sup>9</sup> Similarly, low SES patients less often received adjuvant chemotherapy for colon cancer stage III<sup>10</sup> and esophageal cancer.<sup>11</sup> The latter study also reported lower rates of esophagectomy.<sup>11</sup> Therefore, treatment disparities for prostate cancer might be also present within the Netherlands.

Presence of comorbidities affects treatment selection in prostate cancer.<sup>12</sup> As concomitant medical conditions are more common in patients with cancer with low SES,<sup>13</sup> they may therefore (partly) explain the socioeconomic differences in therapy for prostate cancer.<sup>4,14</sup> Although the presence of comorbidity used to have little influence on the use of radical prostatectomy in the early 1990s,<sup>15</sup> the interaction of comorbidities and socioeconomic

**Financial Disclosure:** The authors declare that they have no relevant financial interests.

From the Department of Research, Eindhoven Cancer Registry, Comprehensive Cancer Centre South (IKZ), Eindhoven, The Netherlands; Department of Urology, Catharina Hospital Eindhoven, The Netherlands; Regional Study Group for Urological Oncology IKZ, Eindhoven, The Netherlands; Department of Radiation Oncology, Institute Verbeeten, Tilburg, The Netherlands; and Department of Public Health, Erasmus Medical Centre, Rotterdam, The Netherlands

Reprint requests: Mieke J. Aarts, Ph.D., Eindhoven Cancer Registry, Comprehensive Cancer Centre South, P.O. Box 231, 5600 AE Eindhoven, The Netherlands. E-mail: m.aarts@ikz.nl or research@ikz.nl

Submitted: June 13, 2012, accepted (with revisions): November 5, 2012

differences toward treatment selection remains to be explored. Recently, we observed that the presence of comorbidities explained 22% of the relative socioeconomic inequalities in prostate cancer survival.<sup>13</sup>

Thus, in this article, we explore and describe the influence of SES in selection of prostate cancer treatment and survival in the Southern Netherlands. We also address these associations in the PSA-detected group of stage cT1c. In addition, we studied the contribution of comorbidities at diagnosis to treatment and survival differences between the SES groups as well.

## PATIENTS AND METHODS

### Study Population

The Eindhoven Cancer Registry records data on all patients newly diagnosed with cancer in the southeastern part of the Netherlands, an area with 2.4 million inhabitants (~15% of the Dutch population) covered by 10 general public hospitals and 2 public radiotherapy departments. Trained registry personnel actively collect data on diagnosis, stage, treatment, and survival from the medical records after notification by pathologists and medical registration offices.

In this study, we included all patients newly diagnosed with prostate cancer between 1998 and 2008. Clinical stage was used according to TNM edition 4.2 (year[s] of diagnosis 1998), 5 (1999-2002), and 6 (2003-2008). Localized disease includes stage 1 and 2; advanced disease stages 3 and 4. Other and unknown (n = 499) stages were excluded. The cT1c-category was defined as cT1cN0,XM0,X as introduced to classify PSA-detected prostate cancer. In the Netherlands, PSA testing was not introduced before 1990 and suggested to have occurred mainly from 2000.<sup>1,16</sup> In 2001, 14.4% of men aged 40 and over was tested in the previous 5 years, compared to 25.7% in 2008.<sup>17</sup>

Comorbidity was coded according to a slightly adapted version of the Charlson comorbidity index.<sup>18</sup> Chronic obstructive pulmonary diseases, cardiovascular and cerebrovascular diseases, peripheral arterial disease, other malignancies, diabetes mellitus, connective tissue diseases, rheumatoid arthritis, kidney, bowel, and liver diseases, dementia, tuberculosis, and other chronic infections were recorded. Comorbidity was defined as diseases that were present at the time of cancer diagnosis. Patients receiving no active treatment (ie, prostatectomy, external beam radiotherapy, brachytherapy, chemotherapy, or hormonal therapy) or only a transurethral resection of the prostate were classified as watchful waiting.

### Socioeconomic Status

The patients' SES was defined at neighborhood level based on the postal code of the residence area, combining mean household income (1998) and mean economic value of the house/apartment (2000), derived from individual tax data provided at an aggregated level (Statistics Netherlands).<sup>19</sup> Postal codes were assigned to 3 SES categories: low (first—third deciles), intermediate (fourth—seventh), and high (eighth—10th). This SES measure is assumed to be valid for 10 years before and after 2000. Patients with unknown SES and postal codes of care-providing institutions were excluded.

### Statistics

The effect of SES on treatment selection was studied by multivariable logistic regression analyses. *P* values were 2-sided

and values <.05 were considered significant. Cutoff for follow up was 1 January 2010. Overall 10-year survival rates were calculated. Univariate SES differences in survival were evaluated with the log-rank test. Cox regression models were used to compute multivariable rates (hazard ratio [HR]). Analyses (logistic regression and Cox regression) were stratified according to stage (localized, advanced) and age (<59, 60-74, ≥75) because of interaction. Interaction was defined by including interaction terms in the logistic regression model and Cox regression model (*P* <.05). We additionally adjusted for age, year of diagnosis (both as continuous variables), and presence of comorbid conditions (0 vs 1, ≥2, unknown). In Cox regression models, dummy variables for therapy were included when at least 10% of the patients received the therapy (ie, for localized stage age groups ≤59 and 60-74): prostatectomy, external beam radiotherapy, brachytherapy, hormonal therapy, watchful waiting; localized stage ≥75 years: external beam radiotherapy, hormonal therapy, watchful waiting; advanced stage all age groups: external beam radiotherapy, and hormonal therapy. Prostatectomy, external beam radiotherapy, and brachytherapy were considered radical therapies; hormonal therapy and watchful waiting were considered nonradical therapies. Other (including surgical procedures other than prostatectomy) and unknown therapies were considered as separate groups.

## RESULTS

We found 11,817 patients with prostate cancer in the Eindhoven Cancer Registry. After excluding patients with unknown SES (n = 266) or postal codes of care-providing institutions (n = 465), a total of 11,086 patients could be included in this study.

### Patient Characteristics

Patients with low SES were older, had 14% more comorbidities, and higher stage of disease compared to those with high SES (Table 1). During the study period, a declining proportion of patients were diagnosed with localized disease (77% vs 68%) in all SES groups. In contrast, more patients were diagnosed with stage cT1c (PSA-detected), increasing from 17% in 1998 to 35% in 2003 and remaining more or less stable thereafter. This pattern was present in all SES groups, slightly more in high SES (nonsignificant).

### Treatment

In general, treatment differences between the SES groups were observed for patients with localized disease, younger than 75. Compared to low SES, those with high SES more often received radical therapies like brachytherapy (ranging from 0%-7% higher compared to low SES) and prostatectomy (10%-16% higher in high SES), whereas external beam radiotherapy and hormonal therapy were less common in high SES (6%-9% lower rates of external beam radiotherapy and 5%-7% lower rates of hormonal therapy in high SES compared to low SES) (Table 2). These patterns, except for hormonal therapy, were also present in the cT1c category.

No significant differences were observed in patients with localized disease aged 75 and over and in patients

Download English Version:

<https://daneshyari.com/en/article/6167576>

Download Persian Version:

<https://daneshyari.com/article/6167576>

[Daneshyari.com](https://daneshyari.com)