

**International Agency for Research on Cancer** 





# **Country Factsheet Series**

Socio-economic inequalities in cancer mortality across the EU27, Norway and Iceland

# Greece

# Key messages

In Greece, national cancer mortality rates in 2015–2019\* were higher in men than in women, with rates for both sexes falling below the European average. Total cancer mortality rates varied across educational levels, according to a social gradient, increasing as educational levels decreased. The social gradient was more pronounced among men, especially for lung cancer. Besides lung cancer, a social gradient was found for all selected cancer types, except for breast cancer, where a mild reverse gradient was observed. The lack of a national cancer strategy, combined with limitations in the public health system and resource shortages, contributes to significant challenges in cancer care. Additi



shortages, contributes to significant challenges in cancer care. Additionally, the country's limited spending on prevention hinders the development of an effective action plan to tackle key risk factors, such as smoking, overweight and obesity and air pollution.

# **Educational inequalities in total cancer mortality**

In Greece, mortality rates for total cancer\*\* in 2015-2019 were lower than the corresponding European average\*\*\* for both sexes. Mortality rates were about two times higher in men than in women (464 and 233 per 100,000, respectively), and varied substantially according to a social gradient, that was more pronounced in men. Men with primary education had cancer mortality rates approximately 50% higher than those with tertiary education (532 vs 353 per 100,000). Women with primary education had about 20% higher cancer mortality rates compared to those with tertiary education (247 vs 211 per 100,000).

The difference in rates between primary and tertiary education (i.e., inequality gap) was lower than the European average but higher than that of certain Western/Southern European countries, such as Italy and Malta, and generally smaller compared to Eastern European countries, like Croatia, Hungary and Czech Republic.

<sup>\*</sup> In Greece, estimates of cancer mortality by education level were based on the "back-calculation" method, which consists in borrowing information from countries with observed data in the same geographical area, specifically Austria, Belgium, Spain, and Italy. See methodological notes at the end and the Methodological report for more information.

<sup>\*\*</sup> All cancers combined.

<sup>\*\*\*</sup> European average is calculated considering 27 EU Member states + Norway and Iceland.



Figure 1. Total cancer mortality by sex and education level

# **Educational inequalities in mortality by cancer site**

### 🚺 Lung cancer

Compared to the corresponding European average, lung cancer mortality was higher in men but lower among women. Lung cancer mortality rates were over four times higher in men compared to women. The social gradient for lung cancer was also more pronounced in men, for whom the disease was the largest contributor to inequalities in total cancer mortality. Those inequalities in lung cancer mortality across sex and socio-economic position in men may be explained by past differences in tobacco smoking patterns across these groups [1]. Smoking habit remains a major public concern in Greece, given also the lack of adequate anti-smoking programme. The percentage of daily smoker in 2019 is among the highest in the EU [2, 3], as is the level of air pollution in the country [1, 4].



Figure 2.a. Cancer-specific mortality by sex and education level: lung



cancer mortality in Greece were below the corresponding European average in both sexes. Mortality rates in men were around 80% higher than in women for colorectal cancer and more than two times higher for stomach cancer. A social gradient was found for both cancer types, but it was more pronounced among men. The observed socioeconomic and sex inequalities in colorectal and stomach cancer mortality, may partly be explained, by past differences in exposure to risk factors including alcohol consumption, smoking, poor diet, obesity; and Helicobacter pylori infection (for stomach cancer) [5, 6]. The uptake of colorectal cancer screening in 2019 is among the lowest in the EU (10% vs 33% EU average) [2].

#### **Breast cancer**

Breast cancer was the highest contributor to cancer mortality among women and showed only a mild social gradient. The relative similarity of the breast cancer mortality rates across educational levels, may be due to an equilibrium and balanced impact of the most important factors affecting breast cancer in the country, i.e., exposure to risk factors, and timely access to diagnostic and treatment services. While population-based breast cancer screening was introduced in Greece only in 2018, screening rates in 2019 are close to the EU average, although differences among socio-economic groups exist [2], with a much lower uptake among women with low, compared to high, income.



#### Prostate cancer

In Greece, prostate cancer mortality was lower than the European average and and showing a moderate social gradient. Those differences may partly be explained by social inequalities in the access to care, and limited healthcare provision and availability of equipment [7].

#### **Cervical cancer**

Cervical cancer mortality rates were generally very low, compared to other cancer types and to the corresponding European average. Rates among primary educated women were higher than those for tertiary educated women, which could be partially



Figure 2.b. Cancer-specific mortality by sex and education level: colorectum



Figure 2.c. Cancer-specific mortality by sex and education level: stomach





related to inequalities in access and utilization of population-based cervical cancer screening and large disparities in screening uptake [2, 3]. An equitable rollout of human papillomavirus (HPV) vaccination and HPV-based screening in the country has the potential to reduce the future burden of the disease and address associated inequalities.



### Figure 2.e. Cancer-specific mortality by education level: cervix

### **Methodological notes:**

Findings are based on the ERAINHE dataset, which includes mortality data by educational attainment, age group, sex, period, country and cause of death. For most countries, the data are derived from individually-linked records, collected and harmonized in different periods in different projects (for the full description see the Methodological report). Geographical and temporal gaps in the ERAINHE dataset were addressed using complementary data sources and appropriate estimation methodologies tailored to the availability of the data. Age-standardised (European Standard Population) mortality rates by educational level for individuals aged 40–79 years were thus estimated for 2015– 2019, using four different methods:

 Method for group A countries, for countries with at least 3 recorded observations over different periods of time: actual observed data for 2015–2019 (when available) or projections based on linear regression models;

- Method for group B countries, for countries with 1 or 2 recorded observations only: incomplete data combined with trends from other databases;
- Method for group C countries, for countries with no observations for certain cancer sites: integration of data from different databases with information from countries in the same geographical area;
- "Back-calculation" method, for countries without available data in the ERAINHE dataset: combination of population a mortality data from different databases with information on educational inequalities in cancer from countries in the same geographical area.

For Greece, the "back-calculation' method was used. **Disclaimer:** As this method also integrates information from countries within the same geographical area, the degree of uncertainty associated with the estimates is higher compared to estimates based solely on national data.

### Contact information

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#### **References:**

1. Huisman, M., A.E. Kunst, and J.P. Mackenbach, Educational inequalities in smoking among men and women aged 16 years and older in 11 European countries. Tob Control, 2005. 14(2): p. 106-132.

2. OECD (2023); EU Country Cancer Profile: Greece 2023, EU Country Cancer Profiles, OECD Publishing, Paris, https://doi.org/10.1787/30b7e1f9-en

3. European cancer inequalities registry (ECIR). Europa.eu [cited 2024 Aug 31]. Available from: https://cancer-inequalities.jrc.ec.europa.eu/

4. Varvadas Cim and Kafatos AG. Smoking policy and prevalence in Greece: an overview. European Journal of Public Health, Volume 17, Issue 2, April 2007, Pages 211–213, <a href="https://doi.org/10.1093/eurpub/ckl094">https://doi.org/10.1093/eurpub/ckl094</a>

5. Manios Y, Panagiotakos DB, Pitsavos C, Polychronopoulos E, Stefanidis C. Implication of socio-economic status on the prevalence of overweight and obesity in Greek adults: the ATTICA study. Health Policy 2005; 74 (2): 224–232. <a href="https://doi.org/10.1016/j.healthpol.2005.01.014">https://doi.org/10.1016/j.healthpol.2005.01.014</a>

 Vaccarella S, Lortet-Tieulent J, Saracci R, Conway DI, Straif K, Wild CP, editors (2019). Reducing social inequalities in cancer: evidence and priorities for research (IARC Scientific Publication No. 168). Lyon, France: International Agency for Research on Cancer. Available from: <u>https://publications.iarc.who.int/580</u>
Hesso I, Kayyali R, Zacharias L, Charalambous A, Lavdaniti M, Stalika E, Ajami T, Acampa W, Boban J, Gebara SN. Cancer care pathways across seven countries in Europe: What are the current obstacles? And how can artificial intelligence help? Journal of Cancer Policy 2024; 39: 100457. <u>https://doi.org/10.1016/j.jcpo.2023.100457</u>