

Methods. 14 Cancer Registries covering alpine regions in Austria, Italy, Switzerland and the national Registry of Slovenia participate in this project. For the years 2001-2005, incidence data have been collected by the participating registries, mortality data are the official mortality files in the respective countries. The study area consists of 219 geographical units, having a median population of 19,383 persons. The total population covered is more than 6 millions. The 12 most important tumour sites or group of sites are examined. For each Registry, age standardized incidence and mortality ratios, together with 95% confidence intervals are analysed. In order to achieve a stable estimate of the underlying pattern and to approach the true underlying risk pattern we applied a Bayesian hierarchical model proposed by Besag, York and Mollié. This model takes adjacency of regions into account. We show only the smoothed maps. In addition, some data quality indices (DCO proportions, M:I ratio and proportion of histologically verified cases) are shown.

Results. Males. For all cancer sites except non melanoma skin cancer and prostate cancer, we observe a gradient from low incidence in Austria and Switzerland to high incidence in Italy (except Trentino and South Tyrol). Slovenia ranks at an intermediate position. For prostate cancer, there is a large variation in incidence, even within the same country, but markedly higher in Austrian regions (without higher risk in mortality). Concerning lung cancer, significantly higher incidence is observed in Varese, Sondrio, Veneto and Slovenia. Also for head&neck cancer and liver cancer, we see a strong north to south gradient, namely high rates in most but not all Italian areas, and lower rates in Austria and Switzerland. **Females.** Aside from a significant excess in Veneto, no strong variation is seen for all cancer sites combined. The variability in incidence is generally lower compared to males, and concerns cervix uteri, stomach and lymphomas. For breast cancer, we see the highest rates in some Italian Areas (Veneto, Varese, Sondrio) and the lowest in Slovenia and St. Gallen. For most Italian areas we observe higher incidence for stomach cancer. For cervix cancer we see high incidence and mortality risk in Slovenia, Carinthia and Tyrol. For the other sites, we observe smaller variation.

Conclusions. Although the study area may share many socio-demographic characteristics, a relevant risk gradient in both incidence and mortality is observed, especially among males. Screening activities may also contribute to the variation observed, but can explain only a small part of the variation observed. The large variation of liver cancer, head&neck cancer and all cancer sites combined for males need further investigations and should lead to public health actions.

- ◆ -

- 083 -

TOTAL AND CANCER MORTALITY PATTERNS IN THE WEST BANK REGIONS

Gianicolo EAL,¹ Abu-Rmeileh NME,² Vigotti MA,¹ Portaluri M,³ Giacomani R²

¹Institute of Clinical Physiology, National Research Council (IFC-CNR), Lecce, Italy; ²Institute of Community and Public Health, Birzeit University, Ramallah, Palestinian National Authority; ³Azienda Sanitaria Locale, ASL Brindisi, Italy

Introduction. Since the year 2000, the West Bank has been divided into small areas separated by check points and by the separation wall. These segregation measures have affected peoples mobility and accessibility to health services. The epidemiological situation in the occupied Palestinian territory is similar to the one in the developing countries. The burden of the communicable diseases is decreasing compared to the increasing burden of the non-communicable diseases. Cardiovascular diseases are the leading cause of death followed by cancer (Palestinian Authority Ministry of Health).

Objectives. To study whether total mortality and cancer specific mortality rates vary in the different Regions of the West Bank and over a ten years period.

Methods. Causes of death data were obtained from the Palestinian Health Management Information Centre (HMIC) – Palestinian Ministry of Health (MoH) for the years 1999-2009. Standardized Mortality Ratios (SMR) have been calculated (reference West-Bank).

Results. A total of 34,628 deaths were reported during the period between 1999 and 2009. The highest SMR for all causes mortality was found in the north-western governorates of the West Bank and the southern governorates and the lowest SMR was found in the eastern. There was difference in SMR between males and females in Ramallah governorate with higher SMR among males. The cancer SMR had similar pattern as all cause SMR. Bethlehem and Nablus have the highest SMR for males and females. Low SMR was found for Jerusalem governorates. This does not reflect the real situation in Jerusalem as these numbers are collected only for Palestinians living Jerusalem area that is under the Palestinian Authority control.

Conclusions. The regional variation in SMRs among Palestinian regions in the West Bank indicates specific risk factors and determinants that cluster in certain areas. These variations might also reflect inaccessibility of health services that has to be further investigated.

- ◆ -

- 084 -

SOURCE APPORTIONMENT OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) AND CARCINOGENIC RISK ESTIMATE IN TARANTO, ITALY

Serinelli M,¹ Calulli C,² Galise I,³ Bisceglia L,¹ Pollice A,² Assennato G¹
¹ARPA Puglia, Italy; ²Dipartimento di Scienze Statistiche Carlo Cecchi, Università degli Studi di Bari, Italy; ³Registro Tumori Puglia, Italy

Introduction. In 2009 the reference value of benzo(a)pyrene (BaP) in ambient air of 1.0 ng/m³ has been exceeded in the urban district of Taranto surrounding the industrial area, where several large plants are located, including an integrated cycle steel plant. In such cases regional authorities are required to develop specific programs to comply with reference value including measures on principal emission sources.

Objectives. To identify emission sources and quantify relative contribution to the PAHs levels; to estimate health impact associated to PAHs exposure in general population.

Methods. For the source apportionment multivariate receptor models have been used. Data of monthly average concentration of PAHs measured in 4 locations in Taranto in two periods (May

2008-December 2008; January 2009-December 2009) have been collected. With US-EPA UNMIX software 5 different models have been applied: for each one, UNMIX estimates profiles of unknown sources and uses diagnostic tools to identify main sources and which chemical species are significant for analysis. To compute the lung cancer risk the WHO unit risk estimate for BaP (8.7×10^{-5} ng/m³) has been adopted.

Results. Preliminary results show that the models employed identify 3 to 4 emission sources. Profile and temporal trends of each

one have been described. Estimated profiles have been compared with measured ones. Based on the average annual BaP level measured (1.3 ng/m³), 2 excess cancer cases in the population of Taranto district are estimated following a lifetime exposure.

Conclusions. Among different emissive sources, the analysis identifies theoretical sources (namely, coke oven batteries) whose profiles, compared with observed data, allow to identify dominant contributions to PAHs pollution and to design corrective actions to reduce environmental and health impact.