

CANCER AMONG MEN AND WOMEN IN THE PRIMARY SECTOR IN THE NORDIC COUNTRIES

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Background and Objective: The primary sector encompasses agriculture, horticulture, forestry and fishing. Both the work and the general way of life of individuals engaged in these occupations may affect their risk of cancer. Previous research in other countries has shown elevated risks for specific cancers, and both risk factors and presumably protective factors are different in these groups as compared to the general population. The aim of the present study was to describe and analyze cancer risk among male and female farmers, gardeners, forestry workers, and fishermen in the Nordic countries.

Methods: Our study includes 991,272 men and 340,065 women aged 30-64 years in the 1960, 1970, 1980/1981 and/or 1990 censuses in Denmark, Finland, Iceland, Norway and Sweden. During follow-up in the five national cancer registries until about 2005 altogether 215,383 new cases of cancer were observed among men and 58,834 among women. The standardized incidence ratio (SIR) for each category was computed as a ratio of the observed number of cancer cases and the expected number calculated from the incidence rates for the national populations.

Results: The overall cancer incidence among male and female farmers, gardeners, and forestry workers were significantly 14-18 % lower than in the general population while fishermen of both genders had SIRs at the average population level. Risk of lip cancer was elevated among the men in all occupational groups included, with the highest SIR for fishermen (SIR 2.27, 95% confidence interval 2.05-2.51). For malignant melanoma and other skin cancer significantly lower risks were seen, SIRs ranging from 0.51 to 0.81. Among women no significant deviation from the general population was seen for any of these sites. For hematological cancers no clear pattern of risk was seen: Multiple myeloma was slightly elevated in farmers (men and women), mycosis fungoides was significantly low in farmers of both genders and in male gardeners. Risk of non-Hodgkin lymphoma was low in male gardeners and forestry workers; leukemia was low in male fishermen and forestry workers. For upper aerodigestive tract cancer (including cancer of the tongue, oral cavity, pharynx, larynx, and esophagus) risk was consistently low among all occupational groups (combined SIR for men 0.60, 0.59-0.80 and for women 0.81, 0.70-0.86) except for fishermen in Denmark and Norway where larynx cancer risk was elevated. Lung cancer risk was significantly low in all male groups except fishermen, and among female farmers and gardeners.

Conclusions: In the present study only the association with lip cancer confirmed previous elevated risks seen between work in the primary sector and cancer risks. Results will be further discussed in light of differences between countries and time periods within the follow-up period. While there are specific risk factors in the primary sector which deserves further attention, the general cancer pattern in these occupations first of all points to work-related life style factors which appear protective. These factors should be studied closer to help model preventive programs.