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Cancer risk diversity in non-western migrants to Europe: An overview of the literature

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ABSTRACT

Background: Cancer risk varies geographically and across ethnic groups that can be monitored in cancer control to respond to observed trends as well as ensure appropriate health care. The study of cancer risk in immigrant populations has great potential to contribute new insights into aetiology, diagnosis and treatment of cancer. Disparities in cancer risk patterns between immigrant and autochthonous populations have been reported many times, but up to now studies have been heterogeneous and may be discordant in their findings. The aim of this overview was to compile and compare studies on cancer occurrence in migrant populations from non-western countries residing in Western Europe in order to reflect current knowledge in this field and to appeal for further research and culturally sensitive prevention strategies.

Methods: We included 37 studies published in the English language between 1990 and April 2010 focussing on cancer in adult migrants from non-western countries, living in the industrialised countries of the European Union. Migrants were defined based on their country of birth, ethnicity and name-based approaches. We conducted a between-country comparison of age-adjusted cancer incidence and mortality in immigrant populations with those in autochthonous populations.

Findings: Across the board migrants from non-western countries showed a more favourable all-cancer morbidity and mortality compared with native populations of European host countries, but with considerable site-specific risk diversity: Migrants from non-western countries were more prone to cancers that are related to infections experienced in early life, such as liver, cervical and stomach cancer. In contrast, migrants of non-western origin were less likely to suffer from cancers related to a western lifestyle, e.g. colorectal, breast and prostate cancer.

Discussion: Confirming the great cancer risk diversity in non-western migrants in and between different European countries, this overview reaffirms the importance of exposures experienced during life course (before, during and after migration) for carcinogenesis. Culturally sensitive cancer prevention programmes should focus on individual risk patterns and specific health care needs. Therefore, continuously changing environments and subsequently changing risks in both migrant and autochthonous populations need to be observed carefully in the future.

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1. Background

Studies on cancer risk in migrant populations have recently gained increased recognition, but still have rather heterogeneous study populations and methods applied. However, insights into risk diversity deduced from such studies contribute to our understanding of carcinogenesis and might help answer unclear aetiology questions.

Migration has become an important phenomenon in Western Europe in terms of population changes and the composition of society during the past decades. In 2005, Western and Central Europe hosted 44.1 million migrants, defined as foreign-born persons.[1] Many of them originate from non-western countries, seeking social security, employment opportunities and a better future.

European societies characterised by an increasing degree of heterogeneity pose major challenges to health care systems and policies. Evidence-based research is therefore a prerequisite for appropriate and individual health care of high quality and effectiveness as well as the implementation of culturally sensitive measures of prevention.[2,3]

Health is closely related to global movements. The transition of disease and risk patterns over time and across countries have been the scope of many epidemiological research questions. Accordingly, infectious diseases become less important as populations advance in terms of westernisation and the role of chronic health conditions, such as cancer and cardio-vascular diseases, becomes predominant.[4]

Hence, migrants from non-western countries are equipped with a unique constellation of risk factors that are determined by exposure and disease patterns experienced in both their home as well as their host country.[5,6] This sudden change in the stage of epidemiological transition as well as environmental determinants has a major impact on an individual's lifetime disease risk.

Many theories have been developed to explain differences in mortality and morbidity between migrants and the population of their host and home countries, respectively, one of them being the healthy migrant effect. Thus, migrants are subject to selection processes that initially underlie good physical and mental health. Those health advantages after migration are thought likely to disappear with advancing duration of residence and generations. As suggested in some studies, no evidence of quickly diminishing health advantages could be observed, challenging this concept and allowing room for other explanations.[7] Nonetheless, the change in risk patterns over time is of special interest in epidemiological research.

Multi-causality and geographical variation make cancer in migrant populations highly suitable for research, especially in cancers whose main causes are still not attributable to either environmental ('nurture components') or genetic ('nature components') risk factors.[8] In this context, the individual life course and particularly early life experiences (as the first step in carcinogenesis) have a great impact and play a major role in the effects of exposure and their association with cancer risks.[9,10]

Investigating the occurrence of cancer in migrant populations may allow for a better understanding of cancer aetiology and of biological factors that can be integrated into prevention and treatment programmes.

The purpose of this article is to compile and compare results from studies conducted all over Europe dealing with cancer in non-western migrant populations. The resulting overview can serve as a guide, reflecting the present state of knowledge in this field, and as an appeal for further research and prevention.

2. Methods

2.1. *Inclusion criteria of studies*

We included studies focussing mainly or partly on cancer incidence and mortality in adult migrants from non-western countries, living in the industrialised countries of the European Union, published in English between 1990 and April 2010. Studies were identified by searching pubmed and other established scientific databases in combination with the following keywords: cancer + ethnicity/ethnic minority/(im)migrant(s)/foreign(ers)/country of birth. A further inclusion criterion was a comparison of the migrant population with the native population of the country of the study (no studies conducted within migrant populations).

2.2. *Study descriptions*

We identified 37 studies conducted in the following seven countries: Denmark (3), France (4), Germany (6), Spain (1), Sweden (7), The Netherlands (5) and the United Kingdom (11). In 51% of the studies (19/37) incidence data were analysed, in 41% (15/37) mortality data and in 8% (3/37) both. All studies were based on the retrospective cohort design.

Owing to the heterogeneous measures of association applied in the studies, we described tendencies instead of combined rate ratios (RRs) or odds ratios (ORs) to indicate differences in risks as follows: significantly elevated, elevated, no difference, decreased and significantly decreased. Age-adjustment procedures had been carried out in all the studies included. Other covariables are listed in Table 1.

In general 70% of the studies (26/37) involved all-cancer comparisons and 24% of the studies (9/37) focused on only one specific cancer site. The most commonly investigated sites were breast (28 studies) and lung cancer (26 studies) as well as stomach and colorectal cancer (24 studies each).

2.3. *Defining the migrant status, generations involved and pooling of migrant origins*

The indicator for defining the migrant population under study ranged from country of birth (of the patient or in combination with the parental country of birth) in 73% (27/37), name-based approaches in 14% (5/37), (self-assigned) ethnicity in 11% (4/37) and a combination in one study.

The applied indicator or proxy for ethnicity is highly dependent on the availability and completeness of potential variables in the particular host country. However, country of birth is the most widely used and accepted proxy although it has some validity limitations with regard to cultural and ethnic identity.[11]