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Diverging patterns of cardiovascular diseases across immigrant groups in Northern Italy[☆]

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ABSTRACT

Background: Only fragmentary data are available on the burden of non-communicable diseases among immigrants in Europe, mostly limited to mortality by cause. Aim of the study is to investigate the prevalence of cardiovascular diseases across different immigrant groups in the Veneto Region (North-Eastern Italy).

Methods: The resident population aged 20–59 was classified according to country of citizenship. The Adjusted Clinical Groups System was adopted to identify selected cardiovascular conditions by linkage of Hospital Discharge Records, Emergency Room visits, Chronic disease registry for copayment exemptions, the Home care database, and drugs reimbursed by the Regional Health Service. Age standardized prevalence rates were compared across population groups, and rate ratios (RR) with 95% confidence intervals (CI) were computed taking the Italian population as reference.

Results: The prevalence of diabetes was higher across all immigrant groups compared to Italians. Specific risk patterns could be identified associated to different ethnicities: South Asian immigrants were at very high risk of diabetes, dyslipidemia, and ischemic heart disease (males RR 2.3, CI 1.9–2.8; females RR 2.0, CI 1.2–3.5). Immigrants from Africa were affected by high rates of hypertension, cerebrovascular diseases, and heart failure, with a more pronounced unfavorable profile among females (hypertension RR 3.0, CI 2.6–3.3; cerebrovascular diseases RR 1.7, CI 1.1–2.7).

Conclusions: Wide differences in the prevalence of cardiovascular diseases could be detected across immigrant groups. These findings represent a first step towards systematic chronic disease surveillance by ethnicity, a fundamental tool for shaping culturally-tailored prevention strategies.

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1. Introduction

Non-communicable diseases (NCDs) and their associated risk factors are becoming a major public health challenge worldwide: in 2016, the largest numbers of deaths were caused by cardiovascular diseases (17.6 million deaths) followed by neoplasms (8.93 million deaths), and chronic respiratory diseases (3.54 million deaths) [1]. The burden of NCD among immigrants in Europe is traditionally expected to follow a transition from a low occurrence in the first period after arrival, to a progressive convergence towards the epidemiological profile of the host country associated with the adoption of a westernized, energy-

rich diet and a more sedentary lifestyle [2]. However, within the scenario of a lower burden of chronic diseases among immigrants with respect to native populations (healthy migrant effect), exceptions have already been registered in the past decades in traditional immigration countries in Northern Europe: a high prevalence of diabetes in most immigrant groups, increased stroke rates among immigrants of West African origin, and a high risk of cardiac ischemic disease in South Asians [3].

These latter observations precede the epidemic of NCD in low- and middle-income countries (LMIC). The epidemiological transition associated with urbanization and westernization of lifestyles is rapidly involving LMIC, and now NCD related mortality considerably exceeds mortality due to communicable diseases, maternal, neonatal and injury related deaths combined [1,4]. As an example, in the last two decades stroke rates declined in high-income and increased in LMIC; in 2010, the highest rates of hemorrhagic stroke were registered in Sub-Saharan Africa and Asia [5]. This scenario is increasingly being reflected by the health profile of immigrants, characterized by a high

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cardiovascular risk soon after their arrival in the host countries. A high burden of diabetes and cardiovascular diseases in selected immigrant groups can now be observed in new destination countries of more recent migratory flows directed also towards Southern Europe [6–9]. Furthermore, the health of immigrants can be impaired by the stress of migration and by a low socioeconomic status: with respect to the native Italian population, immigrants more frequently reported economic difficulties, and were more affected by decreasing employment rates in recent years [10].

The Veneto Region (Northeastern Italy, about 4.9 million inhabitants) is a highly industrialized area, having one of the highest prevalence of resident foreign population in Italy due to many job opportunities available before the beginning of the recent economic crisis. The immigrant population is distributed across many countries of origin mainly from Eastern Europe, Asia, and Africa. The availability of electronic health archives produced through the delivery of care within the publicly funded regional health system represents a unique opportunity to investigate differences by ethnicity in the prevalence of cardiovascular risk factors and diseases in an increasingly diverse population.

2. Methods

Sources of data include health databases routinely available in the Veneto Region for the year 2015: Hospital Discharge Records, Emergency Room visits, Chronic disease registry for copayment exemptions, the Home care database, and drugs reimbursed by the Regional Health Service. To assure a more complete retrieval of chronic conditions, hospital discharge records were investigated also for the period 2010–2014. By linkage of the above archives, the Johns Hopkins University Adjusted Clinical Groups (ACG) System v.10.0.2 has been adopted to classify health needs of the regional population [11]. Selected chronic conditions were identified using the “Expanded Diagnosis Clusters” (EDC, groups of clinically similar diagnoses), and the “Chronic Condition Markers” (combinations of EDCs and medications), both provided by the ACG System. The prevalence of common cardiovascular diseases, related metabolic conditions, and chronic renal failure assessed by EDCs and chronic condition categories of the ACG system was compared across population groups. To this purpose, the chronic condition markers for diabetes and dyslipidemia, and EDCs with a prevalence higher than 10 per 10,000 in the study population were analyzed: hypertension (with/without complications, EDC = CAR14 + CAR15), ischemic heart disease (acute/chronic, CAR03 + CAR12), cerebrovascular diseases (NUR05), heart failure (CAR05), cardiomyopathy (CAR07), cardiac valve disorders (CAR06), and chronic renal failure (REN01).

The resident population registered in the regional health service was classified according to country of citizenship. Immigrants can obtain Italian citizenship by marriage or –on demand– after a minimum of 10 consecutive years of legal residence; their children can obtain it – if born in Italy – only after their 18th birthday. Therefore, the immigrant population identified by citizenship includes second generation immigrants (mostly limited to early pediatric age groups), and excludes subjects born abroad who acquired the Italian citizenship. To deal with larger numbers and to compare with findings from previous

studies, countries of citizenship were grouped by area of provenience based on macro-geographical regions and sub-regions [7–9].

Since the elderly immigrant population is limited, comparisons between Italians and immigrant groups were restricted to residents aged 20–59 years, to deal with a more homogeneous adult population. Also within this adult population, immigrant groups display a very different age structure; therefore, age-standardized prevalence rates (standard = 2001 World population) were computed for the most represented areas of provenience, and the ratio of age-standardized rates (RR) with 95% Confidence Intervals (CI) were obtained taking as reference figures observed in the Italian population.

3. Results

In 2015 immigrants accounted for 13.5% of the resident population aged 20–59 in the Veneto Region. The native Italian population was shifted towards older ages, due to very low birth rates through the past decades; all immigrant populations, except for subjects coming from high income countries, were much younger (Fig. 1). The most represented immigrant group was from Eastern Europe (55% out of all immigrants), followed by citizens from North Africa (12%), South Asia (the Indian sub-continent, 10%), Sub-Saharan Africa (9%), and other Asian countries (8%). Due to low numbers, immigrants from Central-South America and from high income countries were excluded from all subsequent analyses.

Fig. 2 shows the overall prevalence of investigated disorders in the study population by gender. Cardiovascular risk factors (hypertension, dyslipidemia, and diabetes) were the most commonly tracked conditions; the male to female ratio ranged from 1 (cardiac valve disorders) to 4.4 (ischemic heart disease).

Large variation by ethnicity could be observed for almost all investigated diseases. Rates of ischemic heart diseases were significantly increased among South Asians (males RR 2.3, CI 1.9–2.8; females RR 2.0, CI 1.2–3.5), similar to those registered in the Italian population among immigrants from Eastern Europe, and lower in other ethnicities (Table 1, Fig. 3). Immigrants from Sub-Saharan Africa were at increased risk of cerebrovascular diseases, especially the female gender (RR 1.7, CI 1.1–2.7). The prevalence of diabetes was higher across all immigrant groups compared to Italians. However, while only a slight excess was registered among subjects from Eastern Europe, an extremely high risk could be found among South Asians (males RR 4.1, CI 3.7–4.6; females RR 7.2, CI 6.1–8.4). By contrast, the prevalence of hypertension was higher among residents with Italian citizenship, except for the Sub-Saharan ethnicity, affected by very high rates especially in the female gender (males RR 1.3, CI 1.3–1.4; females RR 3.0, CI 2.6–3.3). Some conditions (arrhythmias, cardiac valve disorders) were more

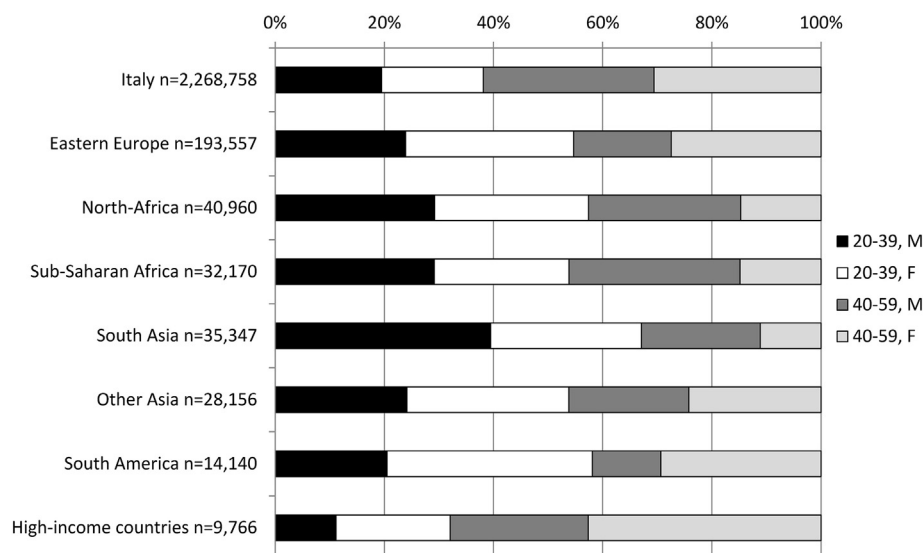


Fig. 1. Population of the Veneto Region (Italy) by age class, gender and area of provenience. Residents registered in the regional health service aged 20–59 years, 2015.

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