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Prevalence of diabetes across different immigrant groups in North-eastern Italy

U. Fedeli [a], V. Casotto [a], E. Ferroni [a], M. Saugo [a], G. Targher [b], G. Zoppini [b,*]

[a] Epidemiological Department, Veneto Region, Italy
[b] Division of Endocrinology, Diabetes and Metabolism, Department of Medicine, University of Verona, Italy

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Abstract *Background and aims:* Type 2 diabetes, one of the most important non-communicable diseases, represents a major health problem worldwide. Immigrants may contribute relevantly to the increase in diabetes. The aim of the study was to investigate variability in diabetes prevalence across different immigrant groups in the Veneto Region (northeastern Italy).
Methods and results: Diabetic subjects on January 2013 were identified by record linkage of hospital discharge records, drug prescriptions, and exemptions from medical charges for diabetes. Immigrant groups were identified based on citizenship. Age-standardized prevalence rates were obtained for residents aged 20–59 years by the direct method, taking the whole regional population as reference. Prevalence rate ratios (RR) with 95% Confidence Intervals (CI) were computed with respect to Italian citizens.

Among residents aged 20–59 years, 45280 Italian and 7782 foreign subjects affected by diabetes were identified. Prevalence rates were highest among immigrants from South-East Asia, RR 4.9 (CI 4.7–5.1) among males, and 7.6 (7.2–8.1) among females, followed by residents from both North and Sub-Saharan Africa. Citizens from Eastern Europe (the largest immigrant group) showed rates similar to Italians. Most South-Asian patients aged 20–39 years were not insulin-treated, suggesting a very high risk of early onset type 2 diabetes in this ethnic group.
Conclusion: Large variations in diabetes prevalence by ethnicity should prompt tailored strategies for primary prevention, diabetes screening, and disease control. An increased demand for prevention and health care in selected population groups should guide appropriate resource allocation.

Introduction

Type 2 diabetes, one of the most important non-communicable diseases (NCDs), represents a major health problem that is increasing at an alarming rate worldwide. Life-style and environmental changes related to the "urbanization/westernization" process are certainly important determinants of the global diabetes epidemic. Country-level diabetes prevalence shows an association with physical inactivity and exposure to a westernized dietary pattern [1]. However, it should be emphasized the role of genetic predisposition as it appears from studies showing that the same environmental conditions may have a heterogeneous impact on different ethnic groups [2]. Therefore, it has recently recalled the importance of collecting data on diabetes prevalence in diverse ethnic groups migrated in different countries [3]; these data are

* Corresponding author. Section of Endocrinology, Diabetes and Metabolism Department of Medicine, Azienda Ospedaliera Universitaria Integrata, Piazzale Stefani, 1, 37126 Verona, Italy. Tel.: +39 045 8123748; fax: +39 045 8027314.
E-mail address: giacomo.zoppini@univr.it (G. Zoppini).

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also crucial for the provision of health services and the allocation of adequate resources.

Previous studies, mainly conducted in Northern and Western Europe countries [4,5], as well as in the United States [6], Canada [7], and Australia [8], have demonstrated an higher prevalence of diabetes among the immigrant compared to the native population.

In Italy, which has been traditionally considered a country of emigration, immigrants represent now an expanding global population of growing social, demographic and political importance, with a rate currently exceeding 10% of the total number of resident in many regions. Recent studies found a prevalence of diabetes among immigrants analyzed as a whole group increased by 30–50% with respect to Italian citizens [9–11]. In 2014 a multidisciplinary task force report called for an increased attention to improve collection of data about immigrants' health in Italy aimed at supporting specific prevention policies to contrast cardiovascular diseases through an appropriate monitoring of related risk factors, such as diabetes [12].

Taking into account the growing evidence that some population groups have a particular predisposition to develop type 2 diabetes, data on diabetes risk should be disaggregated by ethnic group in order to develop and implement tailored and effective prevention and treatment strategies [2].

However, data on diabetes risk disaggregated by ethnicity are still scarce in countries of Southern Europe, including Italy, despite the paramount importance of this information to shape public health policies and clinical practice [11]. In the Veneto Region (northeastern Italy) migrants originate from many countries of Eastern Europe, Africa and Asia, representing therefore an ideal scenario to investigate the variability in diabetes risk across different population groups.

Methods

All subjects with residency in the Veneto Region on January 1, 2013 were classified as diabetics by linkage of three information sources, similarly to previous studies carried out in Italy [13]: hospitalizations in 2009–2012 with mention of diabetes mellitus in any diagnostic position (International Classification of Diseases, 9th Edition – Clinical Modification codes 250.x); at least two separate prescriptions of anti-diabetic drugs in 2012 (Anatomical Therapeutic Chemical –ATC codes A10A, insulin and A10B, oral anti-diabetic drugs); exemption from medical charges due to diabetes.

The study was restricted to the regional resident population (4,881,756 overall residents in Veneto). Irregular immigrants (illegal entry or legal entry followed by overstay), as well as subjects with a short-term stay in the Region for tourism, study, or work, or regular immigrants not yet registered in communal registers were not included. Residents were classified by citizenship as Italian and non-Italian; countries of citizenship were grouped by area of provenience based on macro-geographical regions and sub-regions defined by the United Nation Organization (http://unstats.un.org/unsd/methods/m49/m49regin.htm). The resident population by country and gender on January 1, 2013 used as denominator of rates was provided by the National Institute of Statistics (http://demo.istat.it/). The age structure by country was available from the last Italian census carried out in October 2011 and was applied to the January 2013 population to compute age-specific rates. Age standardized prevalence rates among residents aged 20–59 years by region of origin (standard = overall regional population) were computed for all diabetic subjects, and for insulin-treated and non-insulin treated patients. Subjects over 60 years were not included in the analysis because of the relatively low number of immigrants in this age group. 95% Confidence Intervals of prevalence rate ratios were based on the Poisson distribution.

Results

Residents with foreign citizenship (n = 487,030) constitute about 10% of the overall regional population, but this share increases to 20% among preschool children and young adults. Subjects aged 0–19, 20–59, and ≥60 years account for 27%, 69%, and 4% of the immigrant population, respectively. Table 1 shows the distribution by broad geographical area and main countries of provenience. It can be seen that above half of immigrants come from Eastern Europe, with other consistent minorities represented by subjects from North-Africa, Sub-Saharan Africa,

Table 1 Immigrant population in the Veneto region by citizenship, January 2013. Source: National Institute of Statistics.

Country of citizenship	n	% All immigrants	% Females
North Africa	63,513	13.0	45.5
Morocco	54,252	11.1	46.5
Tunisia	5,468	1.1	39.9
Sub-Saharan Africa	45,379	9.3	42.3
Nigeria	12,385	2.5	48.2
Ghana	11,823	2.4	43.6
Senegal	8,749	1.8	31.6
South Asia	45,856	9.4	42.0
Bangladesh	16,919	3.5	40.7
India	15,476	3.2	41.6
Sri Lanka	9,972	2.0	45.8
Other Asian countries[a]	37,676	7.7	51.1
China	28,722	5.9	49.2
Philippines	6,107	1.3	55.3
Central and South America	15,696	3.2	65.4
Eastern Europe	267,680	55.0	55.8
Romania	102,429	21.0	54.8
Albania	40,912	8.4	48.5
Moldova	37,921	7.8	65.3
Serbia	16,343	3.4	49.3
Macedonia	14,882	3.1	47.0
Ukraine	14,335	2.9	80.7
Eu15, US, other countries[b]	11,205	2.3	60.8

[a] Excluded South Korea, Israel and Japan.
[b] Canada, Australia, New Zealand, Israel, Japan, South Korean, Iceland, Liechtenstein, Norway, San Marino, Switzerland.