Original article

Type 2 diabetes prevalence, health status and quality of care among the North African immigrant population living in France

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Abstract

Aim. – This report is an overview of type 2 diabetes (DT2) in the North African immigrant population living in France.

Methods. – Data were collected in two separate cross-sectional national surveys. DT2 prevalence was estimated using a population-based survey involving 13 959 people aged ≥ 45 years (EDS), while health status and quality of care were evaluated using a sample of 3894 DT2 patients (ENTRED).

Results. – Prevalence of DT2 and obesity was 14.0% [CI 95%: 9.9; 18.0] and 20.5% [15.7; 25.3], respectively, in participants born in North Africa (BNA) and 7.5% [7.0; 8.0] and 15.8% [14.7; 16.8], respectively, in those born in France (BIF). DT2 was associated with region of birth in women after adjusting for age, body mass index and income or occupation, but not after adjusting for education level. In men, DT2 was not associated with region of birth. BNA and BIF patients with diabetes frequently benefited from free medical coverage (88% *vs.* 84%, respectively), although BNA diabetic patients visited a general practitioner less frequently than BIF (8.5 *vs.* 9.0 visits/year, respectively). The percentage of BNA *vs.* BIF diabetes patients tested three times a year for HbA_{1c} was lower (39% *vs.* 44%), while HbA_{1c} was higher in BNA *vs.* BIF diabetics (> 8%: 30% *vs.* 15%). Ophthalmological complications were also more frequent in BNA *vs.* BIF patients with diabetes (25% *vs.* 18%, respectively).

Conclusion. – The greater prevalence of DT2 in BNA women and the poorer glycaemic control observed in the BNA population overall both probably contribute to disparity in diabetes mortality compared with BIF diabetics, a fact that has been observed in previous studies.
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Keywords: Type 2 diabetes; Immigrant; Prevalence; Quality of care; Health status

1. Introduction

Over 345 million people worldwide currently suffer from diabetes and, in 2004, 3.4 million of them died of the disease [1]. Type 2 diabetes (DT2) is a main contributor to the continued increase in diabetes prevalence, accounting for about 85–95% of all diabetes cases [2]. The increase in prevalence is mainly associated with socioeconomic development, including urbanization leading to physical inactivity and changes in diet. Diabetes prevalence is also rather high among immigrant populations worldwide [3–5]. Immigration often induces rapid changes in lifestyle, with higher calorie intakes and more sedentariness, particularly when the socioeconomic level of the host country is higher than that of the country of birth. Moreover, genetic susceptibility to diabetes may also play a role [5,6].

France has long been a country of immigration. In 2008, immigrants accounted for 8.4% of the whole population, with a large proportion coming from North Africa (30%, or 1.6 million). Immigrant populations often belong to lower socioeconomic categories. However, unlike in many other European countries, diabetes among immigrant populations in France has not been well documented due to a lack of information gathered by surveys on nationality, country of birth and ethnicity. Most studies performed in France focus on mortality. Whereas a

protective effect of immigration has been suggested when studying global mortality (from all causes), results for diabetes-related mortality in immigrants are less favourable. Two studies conducted a few decades ago using data from 1970 and 1979–1991 showed higher diabetes-related mortality in women from foreign countries and from Morocco, respectively [7,8], while a recent study using data from 2004–2007 observed a higher diabetes-related mortality rate in foreign-born people of both genders [9].

In 2009, the prevalence of treated diabetes in the general population of France was estimated to be 4.4% [10]. However, rates are much higher among indigenous North African populations, where known or diagnosed diabetes affects 6.6, 14.2 and 9.9% of the population aged ≥ 20 years in Morocco [11], Algeria [12] and Tunisia [13], respectively.

Although poorer states of health and lower quality of care in immigrant populations worldwide have frequently been reported in the literature [14–17], to date only a few hospital-based studies have been focused on health status and quality of diabetes care in immigrants in France [18,19].

The objective of the present study was to determine DT2 prevalence and management in immigrants from North Africa living in France to ascertain whether the higher diabetes mortality observed in this population compared with the French-born population reflected a higher prevalence of DT2, poorer health status and/or lower quality of care. Two sources of data were analyzed: the population-based survey *Enquête décennale santé* (EDS; Decennial Health Survey) 2002–2003 to estimate prevalence; and the ENTRED (*Échantillon national témoin représentatif des personnes diabétiques*; National representative sample of people with diabetes) 2007 survey of patients treated for diabetes to evaluate health status and quality of diabetes care.

2. Methods

In both surveys, the country of origin was defined as the country of birth. This was self-reported in the EDS, but extracted from the National health insurance medical reimbursement claims database in the ENTRED survey. For the sake of simplicity, the acronyms 'BNA' for 'born in North Africa' and 'BIF' for 'born in France' were used to designate the two groups of patients. Patients born outside of France who reported being French by birth (EDS) or French with French parents (ENTRED) were considered to be of French origin and placed in the BIF group. Two individuals from the EDS and 36 (0.9%) from ENTRED were excluded from the analyses because of missing data. Both surveys had been approved by the French *Commission nationale de l'informatique et des libertés* (CNIL; French data protection authority).

2.1. Prevalence

Analysis of DT2 prevalence was performed using the cross-sectional population-based EDS, which is conducted in France every 10 years. The methodology has been described elsewhere [20]. In brief, a random sample of the French population is obtained from the files of the National Institute for Statistics and Economic Studies (INSEE) census database, excluding people living in nursing or retirement homes. Each study participant is interviewed in person on three separate occasions by a trained interviewer over a 2-month period. The names of any drugs used during the study period or taken the day prior to the last visit were also recorded.

All participants who answered questions on their health during the study (n = 35 073) were included. To select the patients with DT2 who constituted the study population, only those aged ≥ 45 years were included in the analyses (n = 13 959).

Individuals were defined as having diabetes if it was self-reported, if they declared buying hypoglycaemic treatment during the study period or if they reported taking a hypoglycaemic agent within 24 h prior to the last visit. Participants' demographic and socioeconomic data were also collected by interviewers at the time of the first visit. Deprived urban zones were those defined by the government as the main targets of citywide campaign policies because of difficulties experienced by the inhabitants of these territories. Body mass index (BMI) was calculated using self-reported weight and height.

2.2. Health status and quality of diabetes care

2.2.1. Design of ENTRED

The ENTRED study was a nationwide cross-sectional survey of people being treated for diabetes. A random sample of 8926 adults was drawn from people living in France who had claimed reimbursements from the two main French health insurance schemes on at least three occasions for either oral hypoglycaemic agents (OHAs) or insulin between August 2006 and July 2007. Together these two schemes cover more than 80% of the French population. They include all currently active and retired salaried workers, self-employed workers and their relatives.

Reimbursement claims for medical care (consultations, laboratory tests, drugs) provided by private practices during the 12 months prior to the sampling were extracted for all sampled patients, although the laboratory test results and diagnoses were not available from this database. A self-administered questionnaire was mailed to patients to gather demographic and socioeconomic data, as well as data on health status, complications and cardiovascular risk factors. Patients were also asked to provide their physician's address so that a clinical questionnaire to obtain laboratory and physical assessments could be completed by the doctor.

The target population of this analysis was DT2 patients. Patients were defined as having type 1 diabetes if they had been diagnosed before age 45 and treated with insulin within the first 2 years of diagnosis. All other patients were considered to have DT2 (unless another type of diabetes was reported by their physician).

2.2.2. Data collected

Socioeconomic status (SES; levels of education and financial difficulty) was self-reported. Patients were considered to have financial difficulties if they answered 'some difficulty', 'difficulty' or 'great difficulty' to the question concerning their ability to 'make ends meet'.